

Chehalis River Basin Water Quality Screening,
January - March 1991

by
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INTRODUCTION

A water quality screening of the Chehalis River Basin was performed by the Watershed Assessments Section of the Environmental Investigations and Laboratory Services Program (EILS) during January and March 1991. The objective of this monitoring study was to identify problem areas associated with runoff conditions. Fecal coliform concentrations were of particular concern.

The Chehalis River Basin covers approximately 2,100 square miles in southwestern Washington. The mainstem Chehalis River drains into Grays Harbor at Aberdeen. The larger tributaries of the Chehalis River included in this screening study were the Wynoochee, Satsop, Black, Skookumchuck, Newaukum, and the South Fork Chehalis Rivers (Figure 1 and Tables 1 and 2). The Wishkah River and the lower Chehalis Basin west of the Wynoochee River were excluded from the scope of this study due to tidal influence which extends as far inland as Montesano and the mouth of the Wynoochee River.

The upper mainstem and South Fork Chehalis drain uplands south and west of Adna. Two major tributaries in mid-basin, the Newaukum and Skookumchuck Rivers, headwater in foothills of the Cascade Range. The largest tributaries, the Satsop and Wynoochee Rivers, arise in the southern Olympic Mountains and join the mainstem just upstream from its entry into Grays Harbor.

Average annual precipitation in the watershed ranges from 50 inches near Centralia to over 200 inches in the upper Wynoochee watershed. Rainfall is greatest from November through March, with river discharge usually peaking between December and March (Kendra and Dickes, 1991).

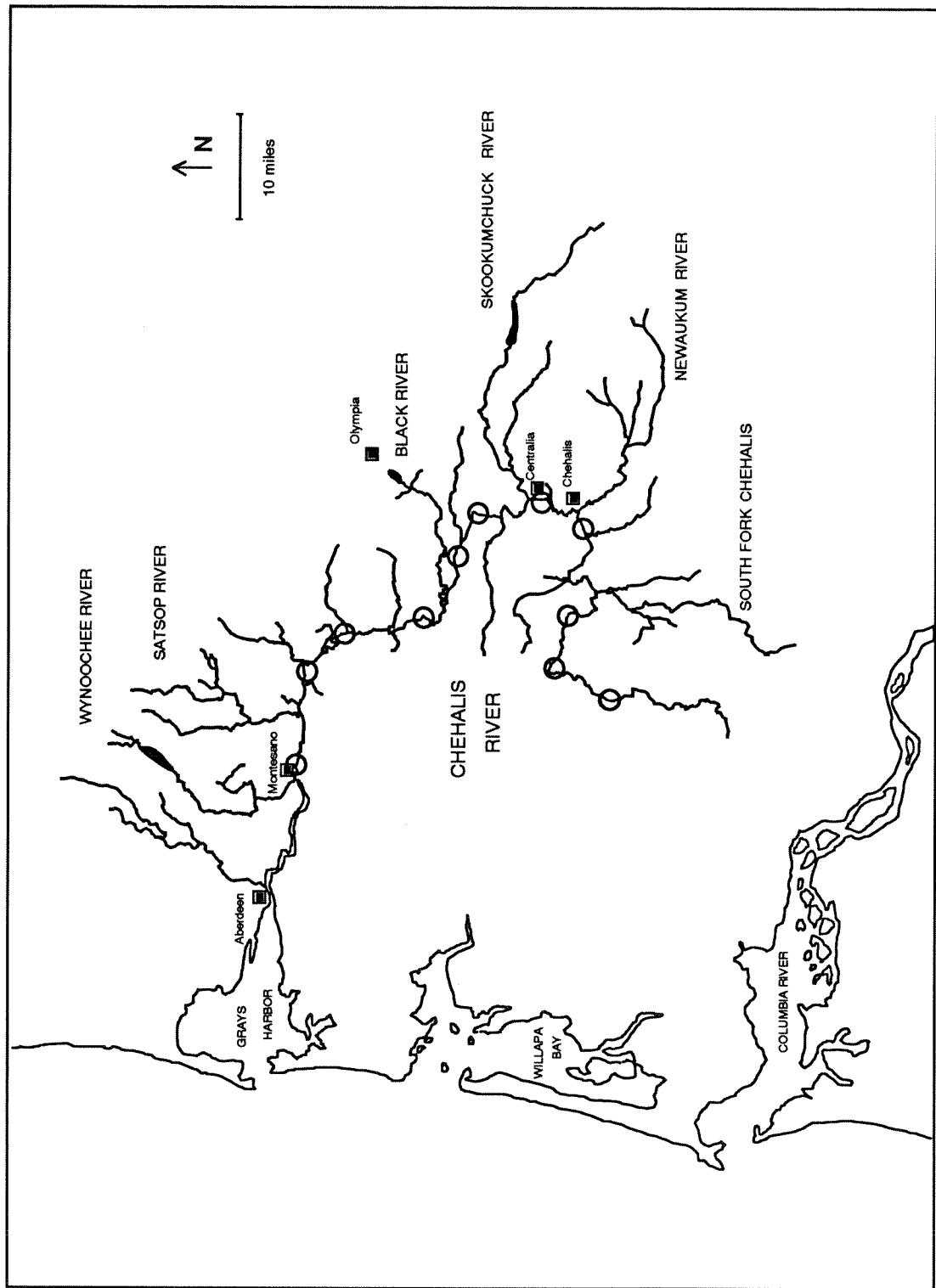


Figure 1. Chehalis River Basin in southwestern Washington.
General areas of mainstem water quality sampling are circled.

Table 1. Drainage characteristics of the Chehalis River and its major tributaries.

	RM*	River Length (mi.)	Drainage Area (sq.mi.)	Mean Discharge (cfs)**
Chehalis River	--	123	2,110	8,500
Wynoochee River	13	64	190	1,300
Satsop River	20	26	300	2,000
Black River	47	26	126	162
Skookumchuck River	67	38	180	350
Newaukum River	75	33	160	490
SF Chehalis River	88	24	125	180

* RM = River Mile above mouth (Grays Harbor).

** Mean annual discharge as measured by USGS; period of record = 14-60 years.

Table 2. Mainstem sampling sites and major tributaries for the Chehalis River Basin (bank denotes loading source enters from right or left bank, facing downstream).

Mainstem Site	River Mile	Loading Source	Bank
State Route 6 at Pe Ell	106.3		
	100.2	Elk Creek	L
Leudinghaus Road at Dryad	98.3		
Ceres Hill Road at Ceres	90.0		
	88.0	S.F. Chehalis River	R
	84.6	Bunker Creek	L
	78.0	Stearns Creek	R
State Route 603 at Claquato	77.6		
	75.2	Newaukum River	R
	74.4	Dillenbaugh Creek	R
	69.2	Salzer Creek	R
Mellen Street at Centralia	67.5		
	66.9	Skookumchuck River	R
	61.8	Lincoln Creek	L
Prather Road near Grand Mound	59.9		
	55.2	Scatter Creek	R
Independence Road near Rochester	54.2		
	51.5	Independence Creek	L
	47.0	Black River	R
	44.9	Garrard Creek	L
South Elma Road near Oakville	44.0		
	39.4	Rock Creek	L
	38.8	Cedar Creek	R
	33.3	Porter Creek	R
Porter Creek Road at Porter	33.3		
	27.8	Mox Chehalis Creek	R
	26.8	Delezene Creek	L
	25.2	Cloquallum Creek	R

Table 2. Continued. Mainstem sampling sites and major tributaries for the Chehalis River Basin (bank denotes loading source enters from right or left bank, facing downstream).

Mainstem Site	River Mile	Loading Source	Bank
Wakefield Road at South Elma	23.9		
	22.7	Workman Creek	L
	20.8	Newman Creek	R
	20.2	Satsop River	R
State Route 107 near Montesano	13.2		
	13.0	Wynoochee River	R

Land use activities are primarily forestry in the higher elevations and agriculture in the river valleys. Major population centers in the study area include Centralia (12,000) and Chehalis (6,000).

Water quality in the Chehalis Basin is affected by both point and nonpoint (diffuse) pollution. There are 33 known point source dischargers in the study area (Pickett and Pelletier, 1992). Nearly half of these are located in the Centralia/Chehalis area. There are also a variety of diffuse sources of pollution including those from forest and agricultural practices, urban runoff, erosion, failure of onsite sewage disposal systems, landfill leachate, and ground water discharges.

METHODS

Water quality sampling was conducted in the watershed over a 6-day period in January and again in March 1991. Due to logistics associated with scheduling laboratory analyses and field support, sampling dates were chosen months in advance. The dates were chosen with the expectation that we would be sampling during wet-weather runoff conditions.

Intensive surveys were performed on the Chehalis mainstem and in sub-basins. Six rivers and 17 creeks constituted the significant tributary sub-basins; Table 3 describes how the data were divided into basins for summary and comparison. Sampling locations were based on accessibility and historical water quality problems, as well as recommendations provided by the Southwest Regional Office.

Two sampling teams were deployed each day to complete the surveys. The mainstem was sampled from Montesano at river mile (RM) 13 to Pe Ell at RM 106. During the mainstem sampling runs, stations at the mouths of significant tributaries were also sampled. Sampling at the mainstem station at Montesano and the mouth of the Wynoochee River was timed to avoid tidal influence.

Sampling teams took replicate samples at 20 percent of their daily sites. Replication was increased to 100 percent on the mainstem Chehalis River sampling runs.

Parametric coverage, methodology, and detection limits are summarized in Table 4. All sites were analyzed for the same general parameters. However, some sites had additional parameters to address particular concerns. Polychlorinated biphenyls (PCB's) were analyzed in Coal Creek to check for contamination from the Lewis County PUD/Ross Electric Superfund site. Pentachlorophenols (PCP's) were tested for in Dillenbaugh Creek to follow-up on the 1986 American Crossarm and Conduit Spill. Metals and hardness were collected at three mainstem sites and at the mouths of the six tributary streams, including Salzer Creek, to identify general problem areas.

Table 3. Chehalis River basin descriptions with associated sampling areas.

Basin No	Description	Basin Sampling Areas
1	Lower Mainstem (MS)	MS RM 13.2 through 59.9
2	Middle Mainstem	MS RM 67.5
3	Upper Mainstem	MS RM 81.1 through RM 106.3
4	Wynoochee River	Wynoochee River, Black Creek, Sylvia, Wedekind, Carter, Schafer, and Big Creeks.
5	Satsop River	Satsop River, Decker, Bingham, and Canyon Creeks.
6	Lower MS Tributaries	Newman, Workman, Cloquallum, Delezene, and Mox Chehalis Creeks.
7	Lower & Middle MS Tributaries	Porter, Cedar, Rock, Garrard, and Independence Creeks.
8	Black River and Tributaries	Black River, Blooms Ditch, Salmon Creek, Beaver Mima, and Waddell Creeks.
9	Middle and Upper MS Tributaries	Scatter, Lincoln, Stearns, Bunker, and Elk Creeks.
10	Skookumchuck	Skookumchuck River, Hanaford, Johnson, and Thompson Creeks.
11	Salzer and Dillenbaugh and Middle MS Tributaries	Salzer, Dillenbaugh, Berwick, Coal, and China Creeks.
12	Newaukum River and Tributaries	Newaukum River, Lucas and Kerney Creeks.
13	South Fork Chehalis R. and Tributaries	South Fork Chehalis River, Stillman, Lake and Halfway Creeks.

Table 4. Parametric Coverage and Methodology for Chehalis River Water Quality Screening, 1991.

Parameter	Method of Analysis	Method (1) Reference	Detection Limit
<u>Field</u>			
pH	Beckman Meter		0.1 Std. units
Temperature	Beckman Thermistor		0.5°C
Dissolved Oxygen	Iodometric, Azide Modified	SM421A	0.1 mg/L
<u>Laboratory</u>			
Specific conductance	Conductivity Cell	SM205	1 μ mhos/cm
Chloride	Ion Chromatography	SM429	0.1 mg cl/L
Turbidity	Nephelometric	SM214A	1 NTU
Total Suspended Solids	Gravimetric	SM209C	1 mg/L
Fecal Coliform	Membrane Filter	SM909C	1 CFU/100 mL
Ammonia-N	Phenate	EPA 350.1	0.01 mg/L
Nitrate + Nitrite-N	Cadmium Reduction	EPA 353.2	0.01 mg/L
Total Phosphorus-P	Ascorbic Acid	EPA 365.3	0.01 mg/L
Lead	Atomic Adsorption	SM 239.2/7421	1.0 μ g/L
Cadmium	Atomic Adsorption	SM 213.2/7131	0.1 μ g/L
Mercury	Atomic Adsorption	SM 245.1/245.5	0.04 μ g/L
Copper	ICP	SM 200.7/6010	2.0 μ g/L
Zinc	ICP	SM 200.7/6010	4.0 μ g/L
Polychlorinated Biphenyls	Gas Chromatography	EPA 608	0.01 μ g/L
Pentachlorophenol	Gas Chromatography	EPA 515	0.001 μ g/L

(1) SM: APHA, 1985

EPA: EPA, 1983

Grab samples were collected in mid-channel via wading, or using specialized sampling equipment on bridges. Samples were put on ice immediately and transported to Manchester Laboratory the morning following collection. Holding times were met for all analyses.

The antecedent precipitation index (API) was used to estimate differences in moisture conditions throughout the basin. The API was calculated using the equation of Linsley *et al.* (1975), which uses precipitation data for the 14 days preceding the first day of sampling. A "k" value of 0.98 was used in the API calculation for both months since evaporation was assumed to be minimal (Michaud, 1987).

Quality Assurance

Laboratory data can be found in Appendices 1 through 4. Some of the data have qualifiers associated with them. The qualifiers included:

- "U" - value was below detection limits (DL).
- "J" - value is an estimated result. For metals, the "J" flag is given to any number which is above the detection limit, but below the quantitation level (5xDL).
- "B" - reflects blank contamination with the analyte.
- "BOF" - signifies that the sample bottle was overfull and adequate homogenization of the sample may not have been possible before a subsample was taken.
- "S" - denotes that fecal coliform colonies were somewhat masked by other bacteria and therefore the value is an estimate.

On March 27, the replicate fecal coliform samples taken at Mima Creek at Bordeaux Road in the Black River sub-basin were quite different, 1 CFU and 160 CFU. The variability is attributed to the natural variability in fecal coliform bacteria sampling.

The March 26 TSS values were qualified with a "B." The lab blanks analyzed with the TSS samples were out of the laboratories acceptable range. The samples were not blank-corrected and thus were qualified. However, since the blank contamination was far less than the method detection limit of 1 mg/L, the data were still considered usable.

The Beckman field pH meters were calibrated by each team at least once daily before sample measurements were taken. However, no inter-meter comparisons were made, so the variability between meters was not determined. Problems with the meters did periodically occur and therefore, some pH data could not be collected.

RESULTS/DISCUSSION

Field and laboratory data are summarized in Tables 5 through 9. Complete results are reported in Appendices 1 through 4.

Precipitation

The runoff potential in the basin during the sampling events in January and March was low (Appendices 5-7). There was minimal precipitation in the basin and daily flows were lower than the monthly means. Generally, the mean monthly flows for mainstem sites in January and March 1991, were lower than the monthly means for the recorded period 1940-1991. The API was highest during the first sampling day in January, but decreased thereafter. The API's for the sampling days in March were more stable than in January. The API's were higher in the lower basin (Aberdeen and Oakville), where precipitation generally is greater.

pH

The freshwater Class A water quality criterion for pH states that values must fall within the range of 6.5 - 8.5 standard units (S.U.). As seen in Table 5, the criterion was exceeded on both ends of the range. The most notable exceedances occurred in China Creek at Ellsbury Street; the Mainstem Chehalis at S. Elma Road near Oakville; and in Garrard Creek at the Mattson Bridge. It is unclear whether the pH excursions found in this water quality screening study reflect site-specific events or reflect a larger basin-wide problem. From this limited data set the pH violations do not appear to be consistent. The pattern of pH excursions (high values in summer and low in the winter) as described by Pickett and Aroner (1992) was not reflected in these data.

Dissolved Oxygen

Values not meeting the Class A dissolved oxygen (D.O.) water quality criterion of 8.0 mg/L were found in Dillenbaugh Creek at two lower reach stations (the railroad trestle and the I-5 B Bridge) during both January and March.

The D.O. problem in the lower mile of the creek has been a historic problem during low flow (Crawford, 1987a; Joy, 1984 and 1988; Pickett and Aroner, 1991). This study indicates that low dissolved oxygen may occur in lower Dillenbaugh Creek year-round. Probable explanations for this depression include: 1) oxygen-demanding loading sources from agricultural and industrial properties along the creek; 2) the minimum reaeration potential in this low-gradient reach; and 3) the presence of a marsh environment upstream.

Table 5. Locations of water quality violations for pH in the Chehalis River Basin,
February and March 1991.

Basin and Site Description	pH (S.U.)*	
	January	March
UPPER CHEHALIS RIVER MAINSTEM (MS)		
MS at PeEll	6.4*	7.9
	8.0	ND
MIDDLE AND UPPER MS TRIBUTARIES		
Scatter Creek at		
James Rd	8.8*	ND
Pacific Hwy SW	8.6*	ND
LOWER AND MIDDLE MS TRIBUTARIES		
Garrard Creek at		
Mattson bridge	6.8	8.9*
DILLENBAUGH/SALZER SUB-BASIN		
China Creek at		
Ellsbury St	7.4	9.4*
SKOOKUMCHUCK SUB-BASIN		
Run Creek	8.6*	7.9
CHEHALIS RIVER LOWER MS		
Lower MS at		
Oakville	6.9	7.4
	6.7	8.9*
SATSOP SUB-BASIN		
Middle Fork Satsop at		
FS Rd 2153 and Kelly Rd	8.6*	7.8
West Fork Satsop at		
Cougar Smith Rd	8.7*	ND

* Class A water quality criterion violation

** ND – no data collected

Table 6. Sites on Dillenbaugh Creek which exceeded the Class A Dissolved Oxygen Criterion.

Sites	D.O. (mg/L)	
	January	March
Railroad Trestle (Main Street access)	6.8	4.3
At I-5 Bridge	7.7	4.8

Conductivity

Table 7 shows that the mean conductivity of the Skookumchuck sub-basin was elevated compared to other sub-basins. This resulted from exceptionally high conductivities found in Hanaford Creek during both January (mean = 213 $\mu\text{mhos}/\text{cm}$) and March (mean = 204 $\mu\text{mhos}/\text{cm}$).

There is no water quality criterion for conductivity; however, the levels in Hanaford Creek are remarkably higher than the rest of Chehalis Basin. Increased conductivity in this creek was also seen by McCall (1971). Probable sources are the surface coal mining operation and electric power plant that are located in the watershed.

Turbidity/TSS

The Newaukum River sub-basin had high mean turbidity and TSS values (Table 7). This was the result of a 5 - 6 acre landslide that occurred on the North Fork Newaukum River one day before our sampling (Chehalis River Council, 1991). If the exceptionally high turbidity (1,120 NTU) and TSS (2,150 mg/L) values are eliminated from the basin calculations, the mean concentrations drop down to levels consistent with the rest of the basin (*i.e.*, 6 NTU and 5 mg/L, respectively).

Nitrate

The mean nitrate-nitrite concentration for the Chehalis River mainstem was 0.73 mg/L. Table 7 shows elevated concentrations occurring in the: upper mainstem tributaries (Lincoln, Scatter, and Stearns Creeks); Skookumchuck Basin (Johnson and Run Creeks); Dillenbaugh/Salzer Basin (China, Coal, and Salzer Creeks); Newaukum Basin (Kearney and Lucas Creeks, and Newaukum River); Black River Basin (Black River and Salmon Creek); and middle mainstem tributaries (Garrard, Independence, and Rock Creeks).

Fecal Coliform

Due to insufficient sample size, comparisons to the water quality criterion were not made for fecal coliform. However, the data do show areas where elevated levels were found and where future sampling efforts could be concentrated (Table 8).

Table 7. Summary of data collected in the Chehalis River Basin, January and March 1991.

Chehalis Basin										Dillenbaugh																
Lower			Mid		Upper		Wynoochee			Satop		Lower			Lower & Mid		Black		Mid & Upper		Skookumchuck		Salzer &		South Fork	
Temp (°C)	min	3	3	3	3	3	4	5	5	4	5	3	2	3	2	3	1	2	1	2	1	1	Chehalis			
pH (s.u.)	min	6.7	6.7	6.4	6.7	7.5	6.7	6.7	6.7	6.7	6.8	6.8	7.5	6.5	6.5	6.7	7.0	7.0	7.1	7.0	7.1	7.1				
D.O. (mg/L)	max	8.9	7.8	8.4	7.6	8.7	7.7	8.9	7.9	8.7	8.8	8.8	8.5	8.5	8.5	8.4	8.0	8.0	8.5	8.0	8.5	8.5				
Cond (μmhos/cm)	min	10.6	11.3	11.7	10.9	11.2	8.1	10.8	9.7	10.5	9.7	10.5	9.9	9.9	9.9	4.3	11.5	11.5	11.3	11.5	11.3	11.3				
Turb (NTU)	max	15.6	15.6	14.3	14.0	13.5	13.5	13.5	13.9	13.9	16.1	15.0	17.2	17.2	17.2	15.4	16.7	16.7	14.0	16.7	14.0	14.0				
TSS (mg/L)	mean	12.2	12.6	13.0	12.5	12.3	12.0	12.0	12.4	12.4	13.0	12.3	13.7	13.7	13.7	12.4	13.1	13.1	12.9	13.1	12.9	12.9				
CL (mg/L)	min	69	62	60	36	46	41	42	43	42	43	55	45	45	45	22	22	29	29	53	53	53				
TP-P (mg/L)	max	87	77	74	65	64	67	79	97	97	94	274	274	274	274	116	116	78	78	79	79	79				
NH3-N (mg/L)	max	78	69	64	48	54	56	57	68	68	67	124	124	124	124	77	77	53	53	63	63	63				
NO3+NO2-N (mg/L)	min	4.5	5.6	0.5	0.1	0.2	1.0	1.0	0.8	1.2	1.2	1.2	1.2	1.2	1.2	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
FC (CFU)	max	14.0	12.0	6.4	6.0	5.2	6.5	6.5	28.5	28.5	11.5	14.0	11.5	11.5	11.5	11.5	1120	1120	1120	1120	1120	1120				
	mean	7.3	8.5	3.0	1.6	1.0	2.5	2.5	2.0	4.7	4.7	8.2	8.0	8.0	8.0	48.5	48.5	48.5	48.5	5.0	5.0	5.0				

Table 8. Elevated fecal coliform bacteria concentrations found in the Chehalis River Basin, January and March 1991.

Site Description	<u>Fecal Coliform (CFU)</u>	
	January	March
UPPER CHEHALIS RIVER TRIBUTARIES		
LINCOLN CREEK at		
Echo Road	200 S	210 S
SOUTH FORK CHEHALIS RIVER		
South Fork Chehalis at		
Boistfort School bridge	390	14
DILLENBAUGH/SALZER SUB-BASIN		
Dillenbaugh Creek at		
Rice Road	3200 J	2900
RR Bridge (west of Chehalis)	19	110
I-5 Bridge	22	100
Salzer Creek at		
Centralia-Alpha Road	110	8300 J
I-5 Bridge	84 S	860
BERWICK CREEK at		
LaBree Road	2400 J	590
CHINA CREEK at		
Ellsbury Street	810	84
BLACK RIVER SUB-BASIN		
Black River at		
Littlerock Bridge	10	210
Swecker's dock	440 S	74
Moon Road Bridge	540	549 J
Howanut Road	546	5
Beaver Creek at		
Littlerock Road	67	339 J
CHEHALIS RIVER LOWER MAINSTEM		
Lower Mainstem at		
Oakville	140	63

Fecal coliform levels were elevated in the Black River mainstem from below the Littlerock Bridge downstream to the Howanut Road Bridge. This is consistent with wet season data collected by Dickes (1990) and Blocher (1991).

Elevated fecal coliform levels were also found in the Dillenbaugh/Salzer sub-basin. Bacteria were particularly high at the following locations: Berwick Creek at La Bree Road, Salzer Creek at Centralia-Alpha Road, Dillenbaugh Creek at Rice Road; and in China Creek at Ellsbury Street. Elevated bacteria in Berwick, Salzer, and Dillenbaugh Creeks were previously identified by Crawford (Crawford, 1987a, b).

PCB/PCP

PCB and PCP data for Coal and Dillenbaugh Creeks can be found in Appendix 3. All PCB concentrations on Coal Creek were below method detection limits. Low concentrations of PCP were detected in samples collected from the lower reach of Dillenbaugh Creek; the Rice Road site had a concentration of 0.007 µg/L, and the site at the railroad bridge below American Crossarm and Conduit had a concentration of 0.097 µg/L. Levels were below EPA's, pH dependent, chronic and acute toxicity criteria (USEPA, 1986). Levels were also below those found by Yake (1987).

Metals

Table 9 compares total recoverable metals data from select sites in the Chehalis Basin compared to chronic and acute toxicity criteria (USEPA, 1986). Copper concentrations exceeded criteria in January at the mainstem site at Pe Ell and at the mouth of the Newaukum River. Copper was generally high basin-wide, but values were close enough to the detection limit to warrant an "estimated" qualifier, which limits confidence in their significance. Lead, cadmium, and mercury were also elevated at certain sites in the basin, but again values were too close to detection limits to be confident of their accuracy.

CONCLUSIONS/RECOMMENDATIONS

- Low moisture conditions predominated in the Chehalis Basin during both January and March 1991 sampling periods. Therefore, the data collected during this project may not reflect the water quality of wet weather runoff in the basin. Additional work would probably be needed to characterize true wet season conditions.
- Further investigation at locations with elevated pH should be considered to determine if elevated pH occurs routinely.
- Efforts should be directed to identify and remediate the sources for oxygen depression in the lower reach of Dillenbaugh Creek.

Table 9. Chehalis River metals data ($\mu\text{g/L}$) compared to EPA chronic and acute toxicity criteria.

Date	Site description	Lab #	Pb	Pb Chronic	Pb Acute	Cd	Cd Chronic	Cd Acute	Hg	Hg Chronic	Hg Acute	Cu	Cu Chronic	Cu Acute	Zn	Zn Chronic	Zn Acute	Hard
<u>Basin 1</u>																		
22-Jan-91	MS @ PRATHER RD	48452	1 U	0.56	14.48	0.1 U	0.39	0.85	0.04 U	0.012	2.4	6.7 J*	3.70	4.93	4 U	33.52	37.01	25.7
19-Mar-91	MS @ PRATHER RD	128452	3.9 J*	0.53	13.55	0.34 J*	0.37	0.80	0.04 U	0.012	2.4	2 U	3.54	4.69	4 U	32.08	35.42	24.4
<u>Basin 3</u>																		
22-Jan-91	MS @ PeELL	48462	1 U	0.44	11.27	0.1 U	0.33	0.68	0.04 U	0.012	2.4	17 *	3.13	4.09	7.5 J	28.36	31.31	21.1
19-Mar-91	MS @ PeELL	128462	1 J*	0.44	11.20	0.1 U	0.33	0.67	0.04 U	0.012	2.4	2 U	3.12	4.07	4 U	28.25	31.19	21.0
<u>Basin 4</u>																		
22-Jan-91	WYNOCHEE R MONT-ABERDN RD	48444	1 U	0.38	9.66	0.1 U	0.30	0.59	0.04 U	0.012	2.4	4 J*	2.82	3.65	4 U	25.60	28.27	18.7
19-Mar-91	WYNOCHEE R MONT-ABERDN RD	128444	1 U	0.39	10.12	0.1 U	0.31	0.62	0.04 U	0.012	2.4	2 U	2.91	3.78	4 U	26.41	29.16	19.4
<u>Basin 5</u>																		
22-Jan-91	SATSTOP R @ I-5 BRIDGE	48446	1 U	0.40	10.26	0.1 U	0.32	0.62	0.04 U	0.012	2.4	3.7 J*	2.94	3.82	4 U	26.64	29.42	19.6
19-Mar-91	SATSTOP R @ I-5 BRIDGE	128446	1 U	0.36	9.33	0.1 U	0.30	0.57	0.05 J*	0.012	2.4	2 U	2.76	3.56	4 U	25.02	27.63	18.2
<u>Basin 7</u>																		
22-Jan-91	PORTER Cr @ PORTER Cr RD	48439	1 U	0.52	13.41	0.1 U	0.37	0.79	0.04 J*	0.012	2.4	2 U	3.52	4.66	4 U	31.86	35.17	24.2
22-Jan-91	PORTER Cr @ PORTER Cr RD	48439	1 U	0.54	13.84	0.1 U	0.38	0.81	0.04 U	0.012	2.4	5 J*	3.59	4.76	4 U	32.52	35.91	24.8
19-Mar-91	PORTER Cr @ PORTER Cr RD	128438	1 U	0.54	13.84	0.1 U	0.38	0.81	0.04 U	0.012	2.4	4 J*	3.59	4.76	4 U	32.52	35.91	24.8
19-Mar-91	PORTER Cr @ PORTER Cr RD	48438	1 U	0.56	14.27	0.1 U	0.39	0.84	0.04 U	0.012	2.4	4.7 J*	3.67	4.87	4 U	33.19	36.64	25.4
<u>Basin 8</u>																		
22-Jan-91	BLACK R @ HOWANUT BRIDGE	128448	1.3 J*	0.62	16.00	0.1 U	0.42	0.93	0.04 U	0.012	2.4	2 U	3.96	5.31	4 U	35.83	39.56	27.8
19-Mar-91	BLACK R @ HOWANUT BRIDGE	48448	1 U	0.59	15.20	0.1 U	0.40	0.88	0.04 U	0.012	2.4	3.7 J	3.83	5.11	4 U	34.62	38.23	26.7
<u>Basin 10</u>																		
22-Jan-91	SKOOK @ HARRISON BRIDGE	48450	1 U	0.66	16.89	0.1 U	0.43	0.97	0.04 U	0.012	2.4	5.3 J*	4.11	5.52	4 U	37.13	41.00	29.0
19-Mar-91	SKOOK @ HARRISON BRIDGE	128450	1 U	0.58	14.98	0.1 U	0.40	0.87	0.04 U	0.012	2.4	2 U	3.79	5.05	4 U	34.29	37.86	26.4
<u>Basin 11</u>																		
21-Jan-91	SALZER Cr UNDER I-5 BRIDGE	48403	1 U	0.69	17.78	0.1 U	0.44	1.02	0.04 U	0.012	2.4	4.7 J*	4.25	5.74	4.7 J	38.43	42.43	30.2
18-Mar-91	SALZER Cr UNDER I-5 BRIDGE	128403	1 U	0.73	18.61	0.1 U	0.46	1.06	0.04 U	0.012	2.4	2 U	4.38	5.93	4 U	39.61	43.74	31.3
21-Jan-91	SALZER Cr @ RENKE RD XING	48402	1 U	0.99	25.35	0.1 U	0.55	1.39	0.04 U	0.012	2.4	6 J*	5.39	7.46	4 U	48.66	53.72	39.9
18-Mar-91	SALZER Cr @ RENKE RD XING	128402	1 U	1.00	25.67	0.1 U	0.56	1.41	0.04 U	0.012	2.4	2 U	5.44	7.53	4 U	49.07	54.18	40.3
<u>Basin 12</u>																		
22-Jan-91	NEWAUKUM R MOUTH	48464	1 U	0.48	12.29	0.1 U	0.35	0.73	0.04 U	0.012	2.4	23.3 *	3.32	4.37	14 J	30.06	33.19	22.6
19-Mar-91	NEWAUKUM R MOUTH	128464	1 U	0.42	10.79	0.1 U	0.33	0.65	0.1 J	0.012	2.4	9.2 J*	3.04	3.96	4 U	27.56	30.43	20.4
<u>Basin 13</u>																		
22-Jan-91	SFORK @ SR6 RR TRESTLE	48466	1 U	1.26	32.33	0.1 U	0.64	1.73	0.04 U	0.012	2.4	8.3 J*	6.35	8.93	4 U	57.21	63.16	48.3

*Exceeds EPA toxicity criteria

- The elevated conductivities on Hanaford Creek should be investigated to confirm source locations and identify if other water quality problems are present.
- Elevated nitrates were detected in the middle and upper portions of the Chehalis River Basin. Efforts to correlate nitrates to current land use information would be insightful.
- Bacterial contamination of Dillenbaugh and Salzer Creeks warrants further site investigations followed by remedial action. These areas historically have had elevated FC levels.
- Poor livestock management practices were particularly evident on Berwick Creek at La Bree Road. This location has been recognized historically as a problem area and immediate action to improve management practices should be initiated.
- The extent of the bacterial problem on China Creek is unclear from this screening survey. Further water quality monitoring would be needed for a more adequate assessment.
- Fecal coliform levels were elevated in the Black River mainstem from Littlerock Bridge downstream to the Howanut Road Bridge. Ecology's Watershed Assessments Section has been awarded a Federal 319 Grant to develop a Total Maximum Daily Load (TMDL) for bacterial contamination in the Black River drainage. The wet season TMDL study is currently in progress.
- Levels of PCB in Coal Creek and PCP in Dillenbaugh Creek were below levels of concern during winter. If further investigations were to be performed for these priority pollutants, sediment sampling would be advised.
- A follow-up investigation should be initiated to confirm the elevated copper levels and to determine whether these levels are occurring naturally or from human sources. Lower method detection limits should be requested for metals analyses in future monitoring efforts.

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APPENDICES

Appendix 1. Chehalis field data, January and March 1991.

Date	Site	Site#	Site description	Lab #	Time	Temp (°C)	pH (s.u.)	D.O. (mg/L)
27-Mar-91	BL	1	MS @ INDEPENDENCE RD	138198	930	7.0	7.3	11.5
30-Jan-91	BL	1	MS @ INDEPENDENCE RD	58198	934	2.7	7.4	15.6
30-Jan-91	BL	2	MS @ S ELMA RD OAKVILLE	58199	828	2.7	7.7	15.2
27-Mar-91	BL	2	MS @ S ELMA RD OAKVILLE	138199	830	6.1	7.5	11.4
27-Mar-91	BL	3	BKGRND MIMA Cr @ BORDEUX R	138200	1110	5.6	7.9	9.6
30-Jan-91	BL	3	MS @ S ELMA RD OAKVILLE	58200	832	2.7	7.7	15.1
30-Jan-91	BL	4	BKGRND MIMA Cr @ BORDEUX R	58201	1130	3.9	7.4	16.0
27-Mar-91	BL	4	BKGRND MIMA Cr @ BORDEUX R	138201	1115	5.6	7.9	12.3
30-Jan-91	BL	5	BLACK R @ HOWANUT RD	58202	900	3.2	7.0	13.2
27-Mar-91	BL	5	BLACK R @ HOWANUT RD	138202	845	7.0	7.3	9.8
27-Mar-91	BL	6	BLACK R @ MOON RD BRDG	138203	955	7.8	7.4	9.7
30-Jan-91	BL	6	BLACK R @ MOON RD BRDG	58203	1002	3.1	7.1	12.6
27-Mar-91	BL	7	BLK R @ 110th AVE BRDG	138204	1325	8.1	7.4	12.0
30-Jan-91	BL	7	BLK R @ 110th AVE BRDG	58204	1242	1.6	6.9	13.0
30-Jan-91	BL	8	BLACK R @ LITTLE ROCK	58205	1219	2.6	6.9	13.7
27-Mar-91	BL	8	BLACK R @ LITTLE ROCK	138205	1150	7.7	7.2	10.0
30-Jan-91	BL	9	BLACK R @ LITTLE ROCK	58206	1222	2.6	6.9	13.9
27-Mar-91	BL	9	BLACK R @ MOON RD BRDG	138206	1000	7.6	7.3	9.7
27-Mar-91	BL	10	MIMA Cr @ RR BRDG	138207	1030	6.2	7.8	12.2
30-Jan-91	BL	11	BLACK R @ SWECKER'S DOCK	58208	1425	3.7	7.0	12.3
27-Mar-91	BL	11	BLACK R @ SWECKER'S DOCK	138208	1230	8.4	7.3	12.4
30-Jan-91	BL	12	BLOOMS DITCH @ 110th BRDG	58209	1302	2.4	6.8	15.0
27-Mar-91	BL	12	BLOOMS DITCH @ 110th BRDG	138209	1340	10.2	7.5	10.6
27-Mar-91	BL	13	SALMON Cr @ LITL RK RD BRDG	138210	1350	8.5	7.4	10.3
30-Jan-91	BL	13	SALMON Cr @ LITL RK RD BRDG	58210	1315	2.0	6.8	14.1
27-Mar-91	BL	14	BEAVER Cr @ LITTLE ROCK RD	138211	1300	8.3	7.5	11.4
30-Jan-91	BL	14	BEAVER Cr @ LITTLE ROCK RD	58211	1334	3.1	7.0	15.4
27-Mar-91	BL	15	MIMA Cr @ GATE RD SW	138212	1055	6.3	7.8	12.0
30-Jan-91	BL	15	MIMA Cr @ RR BRDG	58212	1031	2.7	7.5	16.1
27-Mar-91	BL	16	BEAVER Cr @ LITTLE ROCK RD	138213	1305	8.1	7.4	11.4
30-Jan-91	BL	16	MIMA Cr @ GATE RD SW	58213	1103	3.2	7.4	15.7
30-Jan-91	BL	17	WADDELL Cr @ WADDELL RD	58214	1152	3.7	7.2	15.9
27-Mar-91	BL	17	WADDELL Cr @ WADDELL RD	138214	1135	6.7	7.8	12.3
21-Jan-91	DS	1	MS @ MELLEN ST BRIDGE	48400	1340	4.5	7.0	13.2
18-Mar-91	DS	1	MS @ MELLEN ST BRIDGE	128400	1153	7.6	7.3	11.2
18-Mar-91	DS	2	MS @ MELLEN ST BRIDGE	128401	1158	7.2	7.3	11.4
21-Jan-91	DS	2	MS @ MELLEN ST BRIDGE	48401	1340	4.4	7.1	13.1
21-Jan-91	DS	3	SALZER Cr @ REINKE RD XING	48402	1640	4.0	7.3	13.4
18-Mar-91	DS	3	SALZER Cr @ REINKE RD XING	128402	1345	—	7.6	11.4
21-Jan-91	DS	4	SALZER Cr UNDER I-5 BRIDGE	48403	1255	3.1	6.9	12.2
18-Mar-91	DS	4	SALZER Cr UNDER I-5 BRIDGE	128403	1110	6.9	7.0	10.0
21-Jan-91	DS	5	SALZER Cr @ PROFFIT RD CULV	48404	1550	3.2	7.0	12.8
18-Mar-91	DS	5	SALZER Cr @ PROFFIT RD CULV	128404	1315	6.3	7.2	10.9
18-Mar-91	DS	6	COAL Cr @ SUNBIRD	128405	1230	5.9	7.0	11.6
21-Jan-91	DS	6	SALZER Cr @ PROFFIT RD CULV	48405	1550	3.1	7.0	12.9

Appendix 1. Chehalis field data, January and March 1991. Continued.

Date	Site	Site#	Site description	Lab #	Time	Temp (°C)	pH (s.u.)	D.O. (mg/L)
21-Jan-91	DS	7	SAL Cr @ CENTRALIA-ALPHA RD	48406	1525	3.8	7.2	14.1
18-Mar-91	DS	7	SAL Cr @ CENTRALIA-ALPHA RD	128406	1255	6.5	7.3	12.0
18-Mar-91	DS	8	NF SALZER @ WOOD BRIDGE	128407	1330	—	7.3	11.8
21-Jan-91	DS	8	NF SALZER @ WOOD BRIDGE	48407	1610	4.0	7.1	13.5
18-Mar-91	DS	9	COAL Cr @ SUNBIRD	128408	1225	6.1	7.0	11.7
21-Jan-91	DS	9	COAL Cr @ SUNBIRD	48408	1450	3.3	7.0	13.5
21-Jan-91	DS	10	CHINA Cr @ ELLSBURY ST	48409	1315	4.6	7.4	14.4
18-Mar-91	DS	10	CHINA Cr @ ELLSBURY ST	128409	1123	7.6	9.4	15.4
21-Jan-91	DS	11	BERWICK Cr @ LOGAN HILL RD	48410	1130	1.9	6.9	14.5
18-Mar-91	DS	11	BERWICK Cr @ LOGAN HILL RD	128410	1005	5.7	7.4	13.2
18-Mar-91	DS	12	BERWICK Cr @ LOGAN HILL RD	128411	1010	5.8	7.3	13.1
21-Jan-91	DS	12	BERWICK Cr @ LOGAN HILL RD	48411	1130	1.8	6.8	14.4
18-Mar-91	DS	13	DILLENBAUGH Cr UNDER I-5	128412	800	6.5	6.7	4.8
21-Jan-91	DS	13	DILLENBAUGH Cr UNDER I-5	48412	900	3.2	6.7	7.7
18-Mar-91	DS	14	DILL Cr @ RR BRIDGE	128413	825	6.4	6.7	4.3
21-Jan-91	DS	14	DILL Cr @ RR BRIDGE	48413	945	3.2	6.7	6.8
21-Jan-91	DS	15	DILL Cr @ ROCK HOUSE	48414	1200	3.0	7.2	14.4
18-Mar-91	DS	15	DILL Cr @ ROCK HOUSE	128414	1035	5.8	7.3	12.4
21-Jan-91	DS	16	DILL Cr @ RICE RD	48415	1030	2.9	6.9	11.8
18-Mar-91	DS	16	DILL Cr @ RICE RD	128415	910	6.7	7.1	9.0
18-Mar-91	DS	17	BERWICK Cr @ LA BREE RD	128416	935	5.0	7.4	12.1
21-Jan-91	DS	17	BERWICK Cr @ LA BREE RD	48416	1100	2.5	7.2	14.3
22-Jan-91	LM	1	MS NEAR MONTESANO	48434	1105	4.6	7.4	12.8
19-Mar-91	LM	1	MS NEAR MONTESANO	128434	959	7.4	7.3	11.1
22-Jan-91	LM	2	MS NEAR MONTESANO	48435	1105	4.3	7.4	12.8
19-Mar-91	LM	2	MS NEAR MONTESANO	128435	1008	7.5	7.3	10.9
22-Jan-91	LM	3	MS @ WAKEFIELD RD	48436	1155	4.5	7.2	12.9
19-Mar-91	LM	3	MS @ WAKEFIELD RD	128436	1258	8.3	7.3	11.0
19-Mar-91	LM	4	MS @ WAKEFIELD RD	128437	1306	8.2	7.3	11.0
22-Jan-91	LM	4	MS @ WAKEFIELD RD	48437	1155	4.5	7.2	12.9
19-Mar-91	LM	5	PORTER Cr @ PORTER Cr RD	128438	1340	9.1	7.7	11.2
22-Jan-91	LM	5	PORTER Cr @ PORTER Cr RD	48438	1240	4.3	6.8	13.0
22-Jan-91	LM	6	PORTER Cr @ PORTER Cr RD	48439	1240	4.3	6.9	12.9
19-Mar-91	LM	6	PORTER Cr @ PORTER Cr RD	128439	1354	8.4	7.7	11.0
19-Mar-91	LM	7	MS S ELMA RD NEAR OAKVILLE	128440	1441	9.1	7.3	11.1
22-Jan-91	LM	7	MS S ELMA RD NEAR OAKVILLE	48440	1340	4.1	6.8	12.9
19-Mar-91	LM	8	MS S ELMA RD NEAR OAKVILLE	128441	1449	8.2	7.4	11.1
22-Jan-91	LM	8	MS S ELMA RD NEAR OAKVILLE	48441	1340	4.1	6.9	13.0
22-Jan-91	LM	9	MS @ INDEPENDENCE RD	48442	1515	4.1	7.2	—
19-Mar-91	LM	9	MS @ INDEPENDENCE RD	128442	1638	8.4	7.4	11.3
22-Jan-91	LM	10	MS @ INDEPENDENCE RD	48443	1515	4.1	7.2	13.5
19-Mar-91	LM	10	MS @ INDEPENDENCE RD	128443	1643	8.2	7.3	11.2
22-Jan-91	LM	11	WYNOCHEE R MONT-ABERDN	48444	950	4.6	7.4	13.4
19-Mar-91	LM	11	WYNOCHEE R MONT-ABERDN	128444	1101	8.0	7.5	11.6
22-Jan-91	LM	12	WYNOCHEE R MONT-ABERDN	48445	950	4.6	7.4	13.5
19-Mar-91	LM	12	WYNOCHEE R MONT-ABERDN	128445	1152	7.9	7.5	11.6
22-Jan-91	LM	13	SATSOP R @ I-5 BRIDGE	48446	855	4.6	7.4	13.5
19-Mar-91	LM	13	SATSOP R @ I-5 BRIDGE	128446	835	6.7	7.6	11.5

Appendix 1. Chehalis field data, January and March 1991. Continued.

Date	Site	Site#	Site description	Lab #	Time	Temp (°C)	pH (s.u.)	D.O. (mg/L)
19-Mar-91	LM	14	SATSOP R @ I-5 BRIDGE	128447	848	6.8	7.6	11.5
22-Jan-91	LM	14	SATSOP R @ I-5 BRIDGE	48447	855	4.6	7.5	13.6
22-Jan-91	LM	15	BLACK R @ HOWANUT BRIDGE	48448	1430	4.3	7.0	10.7
19-Mar-91	LM	15	BLACK R @ HOWANUT BRIDGE	128448	1553	9.2	7.3	10.2
22-Jan-91	LM	16	BLACK R @ HOWANUT BRIDGE	48449	1430	4.3	7.0	10.7
19-Mar-91	LM	16	BLACK R @ HOWANUT BRIDGE	128449	1559	8.9	7.3	10.5
22-Jan-91	LM	17	SKOOK @ HARRISON BRIDGE	48450	1530	4.3	6.7	13.2
19-Mar-91	LM	17	SKOOK @ HARRISON BRIDGE	128450	1817	8.3	7.9	11.1
19-Mar-91	LM	18	SKOOK @ HARRISON BRIDGE	128451	1821	7.9	7.9	11.1
22-Jan-91	LM	18	SKOOK @ HARRISON BRIDGE	48451	1530	4.4	6.6	13.4
20-Mar-91	LT	1	MS @ SR 107 BRDG	128468	1125	7.6	7.3	10.6
23-Jan-91	LT	1	MS @ SR 107 BRDG	48468	1225	4.8	7.4	12.9
20-Mar-91	LT	2	MS @ S ELMA WAKEFIELD RD	128469	1250	8.8	7.5	11.0
20-Mar-91	LT	3	MS @ S ELMA WAKEFIELD RD	128470	1305	8.4	7.3	10.8
20-Mar-91	LT	4	MOX CHEH @ MOX CHEH RD	128471	1500	8.5	7.0	11.2
20-Mar-91	LT	5	NEWMAN Cr BLW CONF W/ VANC	128472	1200	8.6	7.2	9.9
23-Jan-91	LT	5	NEWMAN Cr BLW CONF W/ VANC	48472	1305	4.8	6.7	8.1
23-Jan-91	LT	6	NEWMAN Cr SATSOP HWY BRDG	48473	1330	4.5	6.8	13.3
20-Mar-91	LT	6	NEWMAN Cr SATSOP HWY BRDG	128473	1220	7.3	7.4	11.2
20-Mar-91	LT	7	WORKMAN Cr @ LAMBERT RD	128474	1325	7.6	7.3	11.2
23-Jan-91	LT	7	WORKMAN Cr @ LAMBERT RD	48474	1520	5.0	6.7	13.1
23-Jan-91	LT	8	WORKMAN Cr @ LAMBERT RD	48475	1520	5.1	7.0	13.1
20-Mar-91	LT	8	WORKMAN Cr @ LAMBERT RD	128475	1335	7.6	7.3	11.2
20-Mar-91	LT	9	CLOQ Cr @ HWY 12 BRIDGE	128476	1030	6.7	7.6	11.4
23-Jan-91	LT	9	CLOQ Cr @ HWY 12 BRIDGE	48476	1120	5.4	7.3	13.2
23-Jan-91	LT	10	CLOQ Cr @ HWY 12 BRIDGE	48477	1120	5.3	7.3	13.3
20-Mar-91	LT	10	WILDCAT Cr NEAR MOUTH	128477	930	6.2	7.5	11.5
23-Jan-91	LT	11	CLOQ Cr @ ELMA McCLEARY HW	48478	1000	5.4	7.3	13.3
20-Mar-91	LT	11	CLOQ Cr @ ELMA McCLEARY HW	128478	955	6.6	7.6	11.8
23-Jan-91	LT	12	CLOQUALLUM Cr @ STAMPER R	48479	1040	5.5	7.3	13.3
20-Mar-91	LT	12	CLOQUALLUM Cr @ STAMPER R	128479	1010	6.4	7.6	11.5
23-Jan-91	LT	13	WILDCAT Cr NEAR MOUTH	48480	920	5.2	7.4	13.2
20-Mar-91	LT	13	WILDCAT Cr NEAR MOUTH	128480	935	6.2	7.5	11.5
23-Jan-91	LT	14	WILDCAT Cr E FORK	48481	830	4.9	7.4	13.5
20-Mar-91	LT	14	WILDCAT Cr E FORK	128481	855	5.5	7.7	11.7
23-Jan-91	LT	15	DELEZENE Cr @ S BANK RD	48482	1550	5.4	6.8	13.1
20-Mar-91	LT	15	DELEZENE Cr @ S BANK RD	128482	1400	8.6	7.2	11.3
20-Mar-91	LT	16	MOX CHEH @ MALONE RT 12	128483	1430	9.1	7.4	11.4
23-Jan-91	LT	16	MOX CHEH @ MALONE RT 12	48483	1635	5.1	7.2	13.5
20-Mar-91	LT	17	MOX CHEH @ MOX CHEH RD	128484	1450	8.5	7.5	11.2
23-Jan-91	LT	17	MOX CHEH @ MOX CHEH RD	48484	1655	5.4	7.2	13.2
20-Mar-91	MT	1	MS @ PORTER Cr RD	128485	1330	--	--	10.8
23-Jan-91	MT	1	MS @ PORTER Cr RD	48485	1145	5.1	6.8	13.1
23-Jan-91	MT	2	MS S ELMA RD NEAR OAKVILLE	48486	1026	5.2	6.7	13.0
20-Mar-91	MT	2	MS S ELMA RD NEAR OAKVILLE	128486	1105	7.8	8.9	10.8
23-Jan-91	MT	3	MS S ELMA RD NEAR OAKVILLE	48487	1036	5.2	6.7	13.0
20-Mar-91	MT	3	MS @ INDEPENDENCE RD	128487	830	9.5	7.0	11.1

Appendix 1. Chehalis field data, January and March 1991. Continued.

Date	Site	Site#	Site description	Lab #	Time	Temp (°C)	pH (s.u.)	D.O. (mg/L)
20-Mar-91	MT	4	MS @ INDEPENDENCE RD	128488	835	7.9	7.2	11.1
23-Jan-91	MT	4	MS @ INDEPENDENCE RD	48488	807	3.8	8.4	13.3
23-Jan-91	MT	5	BCKGRND INDEPENDENCE Cr	48489	915	5.8	6.7	12.7
20-Mar-91	MT	5	BCKGRND INDEPENDENCE Cr	128489	1000	3.3	7.6	11.5
20-Mar-91	MT	6	PORTER Cr @ HWY 12 BRIDGE	128490	1440	8.4	7.5	11.6
23-Jan-91	MT	6	PORTER Cr @ HWY 12 BRIDGE	48490	1300	5.0	6.9	13.8
23-Jan-91	MT	7	CEDAR Cr @ ELMA GATE RD	48491	1318	5.6	6.9	13.8
20-Mar-91	MT	7	CEDAR Cr @ ELMA GATE RD	128491	1635	14.1	7.8	11.6
20-Mar-91	MT	8	PORTER Cr ABOVE CAMPGROUND	128492	1600	9.2	7.8	11.4
23-Jan-91	MT	8	PORTER Cr ABOVE CAMPGROUND	48492	1228	5.2	7.0	13.9
20-Mar-91	MT	9	GARRARD Cr @ MATTSON BRIDG	128493	1140	7.0	8.9	10.8
23-Jan-91	MT	9	PORTER Cr ABOVE CAMPGROUND	48493	1228	5.2	7.0	13.9
23-Jan-91	MT	10	SHELTON Cr @ CEDAR Cr RD	48494	1335	6.5	6.8	13.0
20-Mar-91	MT	10	SHELTON Cr @ CEDAR Cr RD	128494	1700	11.7	7.8	11.7
20-Mar-91	MT	11	GARRARD Cr @ MATTSON BRIDG	128495	1145	7.2	8.9	10.8
23-Jan-91	MT	11	ROCK Cr CALLOW & S BANK RD	48495	1113	4.9	6.8	13.4
23-Jan-91	MT	12	ROCK Cr @ NORTON RD	48496	1055	5.3	6.8	12.7
20-Mar-91	MT	12	ROCK Cr @ NORTON RD	128496	1250	--	--	11.6
23-Jan-91	MT	13	GARRARD Cr @ MATTSON BRIDG	48497	956	6.0	6.8	12.8
20-Mar-91	MT	13	ROCK Cr CALLOW & S BANK RD	128497	1415	--	--	11.8
20-Mar-91	MT	14	GARRARD Cr BRKLN 1st BRDG	128498	1020	5.0	7.6	11.7
23-Jan-91	MT	14	GARRARD Cr BRKLN 1st BRDG	48498	937	5.0	7.0	12.9
20-Mar-91	MT	15	GARRARD Cr BRKLN 1st BRDG	128499	1025	4.5	--	11.4
23-Jan-91	MT	15	INDEPENDENCE Cr RM 1.2	48499	835	4.2	7.2	13.0
20-Mar-91	MT	16	INDEPENDENCE Cr	128500	930	7.9	7.3	10.9
23-Jan-91	MT	16	INDEPENDENCE Cr RM 1.2	48500	845	4.2	7.2	13.2
20-Mar-91	MT	17	INDEPENDENCE Cr	128501	905	8.1	7.1	11.3
23-Jan-91	MT	17	INDEPENDENCE Cr UPSTREAM	48501	854	4.3	7.0	13.0
26-Mar-91	NE	1	KEARNY Cr @ FRASE RD	138164	825	5.3	7.8	12.0
29-Jan-91	NE	1	KEARNY Cr @ FRASE RD	58164	825	1.2	7.2	13.6
26-Mar-91	NE	2	BKGRND @ BERNIER Cr	138165	915	5.5	7.9	11.8
29-Jan-91	NE	2	BKGRND @ BERNIER Cr	58165	1000	3.0	7.3	12.9
29-Jan-91	NE	3	BKGRND @ BERNIER Cr	58166	1000	3.1	7.5	12.9
26-Mar-91	NE	3	BKGRND @ BERNIER Cr	138166	920	5.7	7.9	11.9
29-Jan-91	NE	4	NEWAUKUM @ RR COUNTY RD B	58167	1510	2.6	7.3	13.3
26-Mar-91	NE	4	NEWAUKUM @ RR COUNTY RD B	138167	1415	8.4	7.7	11.9
26-Mar-91	NE	5	NEWAUKUM @ NEW V/LABREE R	138168	1350	7.8	7.8	12.1
29-Jan-91	NE	5	NEWAUKUM @ NEW V/LABREE R	58168	1410	2.6	7.2	13.7
26-Mar-91	NE	6	KEARNY Cr @ FRASE RD	138169	840	5.3	7.6	12.1
29-Jan-91	NE	6	NEWAUKUM @ NEW V/LABREE R	58169	1410	2.7	7.3	13.7
26-Mar-91	NE	7	NEWAUKUM @ RUSH RD	138170	1330	7.7	7.7	12.2
29-Jan-91	NE	7	NEWAUKUM @ RUSH RD	58170	1440	2.5	7.2	13.7
26-Mar-91	NE	8	NEWAUKUM @ JACKSON HWY	138171	1310	7.6	7.7	12.2
29-Jan-91	NE	8	NEWAUKUM @ JACKSON HWY	58171	1340	2.6	7.3	13.8
26-Mar-91	NE	9	NF NEWAUKUM @ TAUSCHER RD	138172	1135	6.2	7.7	12.1
29-Jan-91	NE	9	NF NEWAUKUM @ TAUSCHER RD	58172	1220	1.1	7.0	14.2
26-Mar-91	NE	10	NF NEWAUKUM R @ TAUSCHER	138173	1120	6.5	7.8	12.3
29-Jan-91	NE	10	NF NEWAUKUM @ TAUSCHER RD	58173	1220	1.2	7.1	14.2

Appendix 1. Chehalis field data, January and March 1991. Continued.

Date	Site	Site#	Site description	Lab #	Time	Temp (°C)	pH (s.u.)	D.O. (mg/L)
29-Jan-91	NE	11	NF NEWAUKUM R @ TAUSCHER	58174	1150	2.1	7.3	16.7
26-Mar-91	NE	11	NF NEWAUKUM R @ TAUSCHER	138174	1125	6.3	7.8	12.3
29-Jan-91	NE	12	NF NEWAUKUM @ N FORK RD	58175	1115	2.2	7.3	
26-Mar-91	NE	12	NF NEWAUKUM @ N FORK RD	138175	1210	7.6	7.8	11.9
26-Mar-91	NE	13	SF NEWAUKUM @ N FORK RD	138176	1255	--	7.8	12.4
29-Jan-91	NE	13	SF NEWAUKUM @ N FORK RD	58176	1320	2.4	7.3	16.4
29-Jan-91	NE	14	SF NEWAUKUM @ GISH RD	58177	1250	2.5	7.2	13.6
26-Mar-91	NE	14	SF NEWAUKUM @ GISH RD	138177	1050	6.2	7.8	12.4
26-Mar-91	NE	15	SF NEW @ JORGENSEN DAIRY	138178	1010	5.1	7.9	12.5
29-Jan-91	NE	15	SF NEW @ JORGENSEN DAIRY	58178	918	2.0	7.3	13.5
26-Mar-91	NE	16	SF NEWAUKUM @ 508	138179	945	5.3	7.9	12.4
29-Jan-91	NE	16	SF NEWAUKUM @ 508	58179	850	1.7	7.4	16.4
26-Mar-91	NE	17	LUCAS Cr @ SENN RD	138180	1230	7.2	7.5	12.2
29-Jan-91	NE	17	LUCAS Cr @ SENN RD	58180	1045	1.4	7.2	13.8
23-Jan-91	OT	2	MS @ S ELMA WAKEFIELD RD	48469	1440	4.6	7.4	12.9
25-Mar-91	SA	1	MS @ WAKEFIELD RD	138147	1605	7.9	7.6	11.0
28-Jan-91	SA	1	MS @ WAKEFIELD RD	58147	1740	3.9	8.3	12.5
25-Mar-91	SA	2	BACKGROUND CANYON R	138148	1015	6.3	7.8	11.5
28-Jan-91	SA	2	MS @ WAKEFIELD RD	58148	1740	3.8	7.9	12.5
25-Mar-91	SA	3	BACKGROUND CANYON R	138149	1017	6.1	7.7	11.5
28-Jan-91	SA	3	BACKGROUND OLD LOG AREA	58149	948	5.3	8.1	12.5
25-Mar-91	SA	4	SATSOP R @ MONTESANO RD	138150	1543	7.8	7.8	11.9
28-Jan-91	SA	4	SATSOP R @ MONTESANO RD	58150	1715	5.3	8.3	12.7
28-Jan-91	SA	5	W FORK SATSOP R @ SATSOP RD	58151	1635	4.1	8.4	13.1
25-Mar-91	SA	5	W FORK SATSOP R @ SATSOP RD	138151	1443	7.7	7.7	12.0
25-Mar-91	SA	6	WF SAT @ SWINGING BR ST PK	138152	1507	7.6	7.8	12.1
28-Jan-91	SA	6	WF SAT @ SWINGING BR ST PK	58152	1615	4.2	8.2	13.2
25-Mar-91	SA	7	WF SATSOP @ COUG SMITH RD	138153	1200	--	--	12.2
28-Jan-91	SA	7	WF SATSOP @ COUG SMITH RD	58153	1155	4.4	8.7	13.4
25-Mar-91	SA	8	MID FORK SATSOP @ SATSOP RD	138154	1422	7.6	7.7	12.2
28-Jan-91	SA	8	MID FORK SATSOP @ SATSOP RD	58154	1535	4.6	8.3	13.0
28-Jan-91	SA	9	MF SATSOP @ KELLY RD	58155	1047	3.9	8.4	13.3
25-Mar-91	SA	9	MF SATSOP @ KELLY RD	138155	1112	6.1	7.5	12.2
25-Mar-91	SA	10	EF SATSOP @ SHAFFER PARK	138156	1347	8.0	7.8	11.8
28-Jan-91	SA	10	EF SATSOP @ SHAFFER PARK	58156	1515	6.0	7.7	12.6
28-Jan-91	SA	11	SATSOP R @ STAR LAKE RD	58157	1300	4.7	8.3	12.9
25-Mar-91	SA	11	SATSOP R @ STAR LAKE RD	138157	1310	8.0	8.1	11.8
25-Mar-91	SA	12	MF SATSOP @ KELLY RD	138158	1116	6.0	7.6	12.1
28-Jan-91	SA	12	SATSOP R @ STAR LAKE RD	58158	1330	4.6	8.0	13.6
25-Mar-91	SA	13	DECKER Cr @ SHAFFER PARK	138159	1405	8.0	7.6	11.4
28-Jan-91	SA	13	DECKER Cr @ SHAFFER PARK	58159	1450	5.5	8.2	12.3
28-Jan-91	SA	14	BINGHAM Cr MO @ HATCHERY R	58160	1420	6.6	8.3	12.6
25-Mar-91	SA	14	BINGHAM Cr MO @ HATCHERY R	138160	900	7.1	7.7	11.5
28-Jan-91	SA	15	BINGHAM Cr MO @ HATCHERY R	58161	1420	6.3	8.1	12.4
25-Mar-91	SA	15	CANYON R @ FS 2153 & KELLY	138161	1042	5.7	7.8	12.1
28-Jan-91	SA	16	BINGHAM Cr @ MATLOCK RD	58162	840	5.9	8.3	12.0
25-Mar-91	SA	16	BINGHAM Cr @ MATLOCK RD	138162	930	7.1	7.5	11.2
25-Mar-91	SA	17	CANYON R @ FS 2153 & KELLY	138163	1043	5.7	7.8	12.2

Appendix 1. Chehalis field data, January and March 1991. Continued.

Date	Site	Site#	Site description	Lab #	Time	Temp (°C)	pH (s.u.)	D.O. (mg/L)
28-Jan-91	SA	17	CANYON R @ FS 2153 & KELLY	58163	1015	3.6	8.6	13.2
29-Jan-91	SF	1	MS @ CERES HILL RD	58181	1405	3.7	8.0	14.1
26-Mar-91	SF	1	MS @ CERES HILL RD	138181	1340	7.8	7.6	11.6
29-Jan-91	SF	2	MS @ CERES HILL RD	58182	1405	3.7	8.0	14.0
26-Mar-91	SF	2	MS @ CERES HILL RD	138182	1350	7.9	7.6	12.3
26-Mar-91	SF	3	MS @ ADNA SR6	138183	1415	7.9	7.5	11.9
29-Jan-91	SF	3	MS @ ADNA SR6	58183	1437	3.4	7.7	13.4
26-Mar-91	SF	4	BKGRND @ UPPER SLIDE Cr	138184	1045	4.8	7.9	12.2
29-Jan-91	SF	4	BKGRND @ UPPER SLIDE Cr	58184	1215	2.6	8.2	13.8
29-Jan-91	SF	5	S FORK @ SR6 RR TRESTLE	58185	1345	3.1	8.2	13.4
26-Mar-91	SF	5	S FORK @ SR6 RR TRESTLE	138185	1315	7.4	7.5	12.8
26-Mar-91	SF	6	SF @ BOISTFORT & MOONHILL	138186	1255	7.6	7.6	12.0
29-Jan-91	SF	6	SF @ BOISTFORT & MOONHILL	58186	1310	3.1	7.9	13.6
26-Mar-91	SF	7	S FORK @ BOISTFORT SCHOOL	138187	1200	7.9	7.5	---
29-Jan-91	SF	7	S FORK @ BOISTFORT SCHOOL	58187	1145	3.1	8.0	13.0
29-Jan-91	SF	8	S FORK @ WILDWOOD	58188	1000	2.3	7.8	13.2
26-Mar-91	SF	8	S FORK @ WILDWOOD	138188	1000	6.1	7.5	11.4
26-Mar-91	SF	9	S FORK @ WILDWOOD RD BRDG	138189	930	4.9	7.7	12.3
29-Jan-91	SF	9	S FORK @ WILDWOOD RD BRDG	58189	930	1.3	8.0	13.9
29-Jan-91	SF	10	S FORK @ INT'L PAPER RD	58190	900	1.9	8.5	14.0
26-Mar-91	SF	10	S FORK @ INT'L PAPER RD	138190	845	4.6	7.8	12.3
26-Mar-91	SF	11	S FORK @ BOISTFORT SCHOOL	138191	1215	7.4	7.5	11.7
29-Jan-91	SF	11	S FORK @ INT'L PAPER RD	58191	900	2.0	8.4	14.1
29-Jan-91	SF	12	STILLMN Cr @ LOST VALLEY RD	58192	1130	2.8	8.1	14.0
26-Mar-91	SF	12	STILLMN Cr @ LOST VALLEY RD	138192	1130	6.9	7.6	12.2
29-Jan-91	SF	13	STILLMAN C @ PeELL McDON RD	58193	1020	1.9	8.2	14.0
26-Mar-91	SF	13	STILLMAN C @ PeELL McDON RD	138193	1030	6.1	7.7	12.3
29-Jan-91	SF	14	LAKE Cr @ KING RD BRDG	58194	1245	2.5	8.0	13.7
26-Mar-91	SF	14	LAKE Cr @ KING RD BRDG	138194	1240	7.7	7.6	11.3
29-Jan-91	SF	15	LAKE Cr @ KING RD BRDG	58195	1245	2.5	7.9	13.7
26-Mar-91	SF	15	STILLMN Cr @ LOST VALLEY RD	138195	1145	6.8	7.6	12.2
29-Jan-91	SF	16	HALFWAY Cr @ PeELL McDON R	58196	1045	2.0	8.0	13.9
26-Mar-91	SF	16	HALFWAY Cr @ PeELL McDON R	138196	1115	6.7	8.5	12.0
29-Jan-91	SF	17	MS @ MELLEN ST BRDG	58197	1505	3.6	7.8	12.9
26-Mar-91	SF	17	MS @ MELLEN ST BRDG	138197	1445	7.8	7.4	11.3
27-Mar-91	SK	1	MS @ PRATHER RD	138215	1400	8.4	7.7	11.6
30-Jan-91	SK	1	MS @ PRATHER RD	58215	1520	3.8	7.1	15.4
27-Mar-91	SK	2	MS @ MELLEN RD	138216	1330	7.8	7.7	11.5
30-Jan-91	SK	2	MS @ MELLEN RD	58216	1410	3.4	7.0	15.6
27-Mar-91	SK	3	BKGRND @ RUN Cr	138217	815	4.4	7.9	12.8
30-Jan-91	SK	3	BKGRND @ RUN Cr	58217	820	1.5	8.6	16.8
30-Jan-91	SK	4	BKGRND @ RUN Cr	58218	820	1.4	8.5	17.2
27-Mar-91	SK	4	MS @ MELLEN RD	138218	1335	7.9	7.6	11.5
30-Jan-91	SK	5	SKOOKUM @ BORST PK INTERCH	58219	1435	3.9	6.9	15.7
27-Mar-91	SK	5	SKOOKUM @ BORST PK INTERCH	138219	1305	8.3	7.7	11.7
30-Jan-91	SK	6	SKOOKUM @ BORST PK INTERCH	58220	1435	3.8	7.1	15.7
27-Mar-91	SK	6	SKOOKUMCHUCK @ SKOOK RD	138220	1020	7.1	7.7	11.9
27-Mar-91	SK	7	SKOOK @ SCHAFFER Co PARK	138221	1135	7.5	7.8	11.9

Appendix 1. Chehalis field data, January and March 1991. Continued.

Date	Site	Site#	Site description	Lab #	Time	Temp (°C)	pH (s.u.)	D.O. (mg/L)
30-Jan-91	SK	7	SKOOK @ SCHAFFER Co PARK	58221	1210	3.9	6.6	15.6
30-Jan-91	SK	8	SKOOKUMCHUCK @ 7th ST	58222	1135	4.0	6.8	15.5
27-Mar-91	SK	8	SKOOKUMCHUCK @ TONO RD	138222	1110	7.6	7.7	11.9
27-Mar-91	SK	9	SKOOKUMCHUCK @ SKOOK RD	138223	1015	7.1	7.8	11.9
30-Jan-91	SK	9	SKOOKUMCHUCK @ SKOOK RD	58223	1030	4.3	6.9	15.7
30-Jan-91	SK	10	SKOOK @ RESERVOIR OUTLET	58224	950	4.7	6.8	16.2
27-Mar-91	SK	10	SKOOK @ RESERVOIR OUTLET	138224	935	7.3	7.3	12.2
27-Mar-91	SK	11	SKOOK ABOVE RESERV RUN Cr	138225	845	4.3	7.9	12.8
30-Jan-91	SK	11	SKOOK ABOVE RESERV RUN Cr	58225	850	2.3	7.5	16.7
30-Jan-91	SK	12	HANAFORD Cr @ HANAFORD RD	58226	1230	2.1	6.5	14.9
27-Mar-91	SK	12	HANAFORD Cr @ HANAFORD RD	138226	1230	7.5	7.4	10.6
27-Mar-91	SK	13	SF HANAFORD @ HANAFORD RD	138227	1215	7.7	7.2	9.9
30-Jan-91	SK	13	SF HANAFORD @ HANAFORD RD	58227	1300	1.8	6.7	14.4
27-Mar-91	SK	14	HANAFORD Cr @ HANAFORD RD	138228	1235	7.5	7.3	10.5
30-Jan-91	SK	14	SF HANAFORD @ HANAFORD RD	58228	1300	1.7	6.7	14.4
30-Jan-91	SK	15	NF HANAFORD @ RR TRESTLE	58229	1325	2.8	6.7	15.6
27-Mar-91	SK	15	NF HANAFORD @ RR TRESTLE	138229	1200	7.7	7.5	11.3
27-Mar-91	SK	16	JOHNSON Cr	138230	955	5.3	7.7	11.9
30-Jan-91	SK	16	JOHNSON Cr	58230	1010	1.3	6.7	16.4
30-Jan-91	SK	17	THOMPSON Cr @ THOMPS Cr RD	58231	1105	1.0	6.7	17.2
27-Mar-91	SK	17	THOMPSON Cr @ THOMPS Cr RD	138231	1035	5.3	7.7	12.4
19-Mar-91	UM	1	MS @ PRATHER RD	128452	1530	8.4	7.4	11.3
22-Jan-91	UM	1	MS @ PRATHER RD	48452	1630	3.4	6.8	13.2
19-Mar-91	UM	2	MS @ PRATHER RD	128453	1535	8.7	7.3	11.3
22-Jan-91	UM	2	MS @ PRATHER RD	48453	1630	3.5	6.8	13.2
22-Jan-91	UM	3	MS @ MELLEN ST BRIDGE	48454	1430	3.4	6.7	13.3
19-Mar-91	UM	3	MS @ MELLEN ST BRIDGE	128454	1330	7.2	7.3	11.3
19-Mar-91	UM	4	MS @ MELLEN ST BRIDGE	128455	1347	7.8	7.3	11.4
22-Jan-91	UM	4	MS @ MELLEN ST BRIDGE	48455	1430	3.5	6.7	13.4
22-Jan-91	UM	5	MS @ ADNA	48456	1220	3.6	6.9	13.8
19-Mar-91	UM	5	MS @ ADNA	128456	1245	7.3	7.5	11.7
22-Jan-91	UM	6	MS @ ADNA	48457	1220	3.6	7.0	13.8
19-Mar-91	UM	6	MS @ ADNA	128457	1250	7.0	7.4	11.7
22-Jan-91	UM	7	MS @ CERES HILL	48458	1040	3.5	6.9	14.3
19-Mar-91	UM	7	MS @ CERES HILL	128458	1100	7.0	7.6	12.1
19-Mar-91	UM	8	MS @ CERES HILL	128459	1110	7.4	7.5	12.0
22-Jan-91	UM	8	MS @ CERES HILL	48459	1040	3.4	6.9	14.3
19-Mar-91	UM	9	MS CHANDLER RD AT DRYAD	128460	1015	6.3	7.7	12.1
22-Jan-91	UM	9	MS CHANDLER RD AT DRYAD	48460	1000	3.2	7.0	14.3
19-Mar-91	UM	10	MS CHANDLER RD AT DRYAD	128461	1030	6.4	7.6	12.1
22-Jan-91	UM	10	MS CHANDLER RD AT DRYAD	48461	1000	3.2	7.0	13.9
22-Jan-91	UM	11	MS @ PeELL	48462	830	2.8	8.0	14.2
19-Mar-91	UM	11	MS @ PeELL	128462	900	5.4	7.8	12.2
22-Jan-91	UM	12	MS @ PeELL	48463	850	2.8	8.0	14.2
19-Mar-91	UM	12	MS @ PeELL	128463	930	5.6	7.9	12.3
22-Jan-91	UM	13	NEWAUKUM R MOUTH	48464	1315	3.0	8.1	14.0
19-Mar-91	UM	13	NEWAUKUM R MOUTH	128464	1415	7.9	7.3	11.4
22-Jan-91	UM	14	NEWAUKUM R MOUTH	48465	1315	3.0	7.9	14.0

Appendix 1. Chehalis field data, January and March 1991. Continued.

Date	Site	Site#	Site description	Lab #	Time	Temp (°C)	pH (s.u.)	D.O. (mg/L)
19-Mar-91	UM	14	NEWAUKUM R MOUTH	128465	1425	8.0	7.4	11.6
19-Mar-91	UM	15	SOUTH FORK @ TRELLIS	128466	1145	7.5	7.5	11.7
22-Jan-91	UM	15	SOUTH FORK @ TRELLIS	48466	1135	3.5	7.0	--
22-Jan-91	UM	16	SOUTH FORK @ TRELLIS	48467	1135	4.3	7.2	13.7
19-Mar-91	UM	16	SOUTH FORK @ TRELLIS	128467	1200	7.0	7.4	11.7
18-Mar-91	UT	1	MS @ INDEPENDENCE RD	128417	1345	--	--	11.4
21-Jan-91	UT	1	MS @ INDEPENDENCE RD	48417	1400	5.2	8.2	13.1
21-Jan-91	UT	2	MS @ ADNA BRIDGE SR 6	48418	1040	3.5	8.2	13.4
18-Mar-91	UT	2	MS @ ADNA BRIDGE SR 6	128418	1050	--	--	11.7
18-Mar-91	UT	3	MS @ PeELL	128419	830	--	--	12.7
21-Jan-91	UT	3	MS @ PeELL	48419	825	2.9	6.3	14.3
18-Mar-91	UT	4	MS @ CERES HILL RD	128420	1000	--	--	12.1
21-Jan-91	UT	4	MS @ PeELL	48420	825	2.8	6.4	14.1
18-Mar-91	UT	5	MS @ CERES HILL RD	128421	930	--	--	12.1
21-Jan-91	UT	5	MS @ CERES HILL RD	48421	940	3.4	8.4	14.3
18-Mar-91	UT	6	BUNKER RD PAST INGALLS RD	128422	1150	--	--	11.4
21-Jan-91	UT	6	BUNKER RD PAST INGALLS RD	48422	1145	5.1	7.9	12.8
21-Jan-91	UT	7	LINCOLN Cr BEHIND GRANGE	48423	1255	5.0	7.8	11.5
18-Mar-91	UT	7	LINCOLN Cr BEHIND GRANGE	128423	1230	--	--	10.5
18-Mar-91	UT	8	SCATTER Cr @ JAMES RD	128424	1415	--	--	12.8
21-Jan-91	UT	8	SCATTER Cr @ JAMES RD	48424	1430	5.3	8.8	14.0
18-Mar-91	UT	9	SCATTER Cr @ PACIFIC HWY	128425	1440	--	--	11.7
21-Jan-91	UT	9	SCATTER Cr @ PACIFIC HWY	48425	1440	5.8	8.6	12.7
18-Mar-91	UT	10	SCATTER Cr ABOVE TENINO	128426	1515	--	--	10.5
21-Jan-91	UT	10	SCATTER Cr ABOVE TENINO	48426	1500	4.8	8.5	11.1
18-Mar-91	UT	11	LINCOLN Cr BEFORE GALVIN	128427	1245	--	--	10.8
21-Jan-91	UT	11	LINCOLN Cr BEFORE GALVIN	48427	1315	3.4	8.2	12.6
21-Jan-91	UT	12	LINCOLN Cr @ ECHO RD	48428	1220	5.0	8.2	13.1
18-Mar-91	UT	12	LINCOLN Cr @ ECHO RD	128428	1215	--	--	12.0
21-Jan-91	UT	13	LINCOLN Cr @ ECHO RD	48429	1245	5.1	8.1	--
18-Mar-91	UT	13	SCATTER Cr ABOVE TENINO	128429	1500	--	--	10.5
21-Jan-91	UT	14	STEARNS Cr @ OAKS RD	48430	1030	2.7	8.0	12.1
18-Mar-91	UT	14	STEARNS Cr @ OAKS RD	128430	1030	--	--	10.5
21-Jan-91	UT	15	BUNKER Cr @ CERES Cr RD	48431	1110	3.4	7.6	13.7
18-Mar-91	UT	15	BUNKER Cr @ CERES Cr RD	128431	1115	--	--	11.9
21-Jan-91	UT	16	BUNKER Cr @ CERES Cr RD	48432	1115	3.5	7.5	13.7
18-Mar-91	UT	16	ELK Cr JUST PAST DOTY	128432	915	--	--	12.9
18-Mar-91	UT	17	ELK Cr JUST PAST DOTY	128433	900	--	--	13.0
21-Jan-91	UT	17	ELK Cr JUST PAST DOTY	48433	900	3.2	8.3	15.0
28-Jan-91	WY	1	MS @ SR 107	58130	1645	4.5	7.0	11.7
25-Mar-91	WY	1	MS @ SR 107	138130	1444	8.1	7.4	11.0
28-Jan-91	WY	2	BKG RND SITE V-SHAPE TRAP	58131	1020	2.9	7.6	14.0
25-Mar-91	WY	2	MS @ SR 107	138131	1447	8.1	7.5	10.9
28-Jan-91	WY	3	BKG RND SITE V-SHAPE TRAP	58132	1020	2.9	7.6	14.0
25-Mar-91	WY	3	BKG RND SITE V-SHAPE TRAP	138132	945	5.2	7.2	11.8
25-Mar-91	WY	4	WYNOCHEE R @ RM 1.6	138133	1405	7.8	7.4	11.4
28-Jan-91	WY	4	WYNOCHEE R @ RM 1.6	58133	1600	5.6	7.1	13.1
28-Jan-91	WY	5	WYNOCHEE @ GEISSLER RD	58134	1505	5.6	7.1	13.2

Appendix 1. Chehalis field data, January and March 1991. Continued.

Date	Site	Site#	Site description	Lab #	Time	Temp (°C)	pH (s.u.)	D.O. (mg/L)
25-Mar-91	WY	5	WYNOCHEE @ GEISSLER RD	138134	1309	7.4	7.4	11.6
25-Mar-91	WY	6	WYNOCHEE @ WYN-WISHKAH	138135	1228	7.4	7.4	11.6
28-Jan-91	WY	6	WYNOCHEE @ WYN-WISHKAH	58135	1345	5.4	7.2	13.3
28-Jan-91	WY	7	WYNOCHEE @ FS 2294 BRIDGE	58136	1125	4.6	7.4	13.8
25-Mar-91	WY	7	WYNOCHEE @ FS 2294 BRIDGE	138136	1032	6.1	7.2	11.8
28-Jan-91	WY	8	WYNOCHEE @ FS 2294 BRIDGE	58137	1125	4.7	7.5	13.8
25-Mar-91	WY	8	WYNOCHEE @ GEISSLER RD	138137	1312	7.4	7.5	11.5
28-Jan-91	WY	9	WYNOCHEE ABOVE RESERVOIR	58138	940	3.8	7.3	13.4
25-Mar-91	WY	9	WYNOCHEE R @ RM 1.6	138138	1408	7.8	7.4	11.3
25-Mar-91	WY	10	BLACK Cr MO @ BLACK Cr RD	138139	1251	7.6	7.0	11.0
28-Jan-91	WY	10	BLACK Cr MO @ BLACK Cr RD	58139	1440	4.6	6.7	13.2
25-Mar-91	WY	11	SYLVIA Cr @ W PIONEER ST	138140	1424	7.8	7.1	10.9
28-Jan-91	WY	11	SYLVIA Cr @ W PIONEER ST	58140	1615	4.7	6.7	12.9
25-Mar-91	WY	12	WEDEKIND Cr @ GEISSLER RD	138141	1335	7.3	7.2	11.1
28-Jan-91	WY	12	WEDEKIND Cr @ GEISSLER RD	58141	1530	5.5	6.9	12.9
28-Jan-91	WY	13	CARTER Cr @ WYNOCHEE RD	58142	1310	4.2	7.1	13.9
25-Mar-91	WY	13	CARTER Cr @ WYNOCHEE RD	138142	1202	7.1	7.2	11.7
25-Mar-91	WY	14	SCHAFFER Cr ABOVE COAL Cr	138143	1127	6.4	7.2	11.8
28-Jan-91	WY	14	SCHAFFER Cr ABOVE COAL Cr	58143	1230	4.4	7.2	13.6
28-Jan-91	WY	15	SCHAFFER Cr ABOVE COAL Cr	58144	1230	4.4	7.3	13.7
25-Mar-91	WY	15	WEDEKIND Cr @ GEISSLER RD	138144	1338	7.3	7.2	11.1
25-Mar-91	WY	16	BIG Cr @ FS 22 BRIDGE	138145	1018	5.7	7.2	11.8
28-Jan-91	WY	16	BIG Cr @ FS 22 BRIDGE	58145	1100	5.3	7.3	13.2
25-Mar-91	WY	17	W BRANCH WYN FS RD 2385	138146	922	5.3	7.2	11.9
28-Jan-91	WY	17	WYNOCHEE ABOVE RESERVOIR	58146	940	3.8	7.3	13.4

Appendix 2. Chehalis lab data, January and March 1991.

Date	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N
				(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
30-Jan-91	BL	1 MS @ INDEPENDENCE RD	58198	87	10.0	7	8	4.7	0.07	0.05	0.92
27-Mar-91	BL	1 MS @ INDEPENDENCE RD	138198	74	7.5	2	41	3.7	0.03	0.02	0.77
30-Jan-91	BL	2 MS @ S ELMA RD OAKVILLE	58199	87	7.0	4	140	4.6	0.07	0.06	0.96
27-Mar-91	BL	2 MS @ S ELMA RD OAKVILLE	138199	75	9.1	5	63	3.7	0.03	0.04	0.76
30-Jan-91	BL	3 MS @ S ELMA RD OAKVILLE	58200	87	6.5	5	140	4.6	0.07	0.06	0.96
27-Mar-91	BL	3 BKGRND MIMA Cr @ BORDEUX RD	138200	46	1.6	1 U	160 S	2.6	0.01 U	0.01	0.17
30-Jan-91	BL	4 BKGRND MIMA Cr @ BORDEUX RD	58201	43	1.6	1	1	2.6	0.01	0.01 U	0.19
27-Mar-91	BL	4 BKGRND MIMA Cr @ BORDEUX RD	138201	46	2.0	1 U	1 U	2.4	0.01 U	0.01	0.17
30-Jan-91	BL	5 BLACK R @ HOWANUT RD	58202	87	1.4	2	670 J	4.3	0.08	0.11	1.13
27-Mar-91	BL	5 BLACK R @ HOWANUT RD	138202	83	2.4	1 U	1 U	3.8	0.04	0.02	0.89
30-Jan-91	BL	6 BLACK R @ MOON RD BRDG	58203	82	1.7	2	540	4.3	0.09	0.12	0.98
27-Mar-91	BL	6 BLACK R @ MOON RD BRDG	138203	78	2.0	1	580	3.6	0.05	0.05	0.75
30-Jan-91	BL	7 BLK R @ 110th AVE BRDG	58204	72	1.0	1	3	3.1	0.03	0.02	0.71
27-Mar-91	BL	7 BLK R @ 110th AVE BRDG	138204	73	1.4	1 U	5	2.6	0.03	0.02	0.44
30-Jan-91	BL	8 BLACK R @ LITTLE ROCK	58205	62	1.3	2	10	3.0	0.03	0.02	0.58
27-Mar-91	BL	8 BLACK R @ LITTLE ROCK	138205	66	1.5	1 U	210 J	2.8	0.07	0.02	0.42
30-Jan-91	BL	9 BLACK R @ LITTLE ROCK	58206	62	1.0	1	11	3.0	0.03	0.02	0.58
27-Mar-91	BL	9 BLACK R @ MOON RD BRDG	138206	78	2.0	1 U	520 J	3.8	0.05	0.06	0.77
27-Mar-91	BL	10 MIMA Cr @ RR BRDG	138207	51	4.1	1	4	2.6	0.01 U	0.01	0.32
30-Jan-91	BL	11 BLACK R @ SWECKER'S DOCK	58208	81	1.6	2	440 S	4.0	0.08	0.16	1.01
27-Mar-91	BL	11 BLACK R @ SWECKER'S DOCK	138208	80	1.8	1	74	3.5	0.08	0.10	0.90
30-Jan-91	BL	12 BLOOMS DITCH @ 110th BRDG	58209	67	1.8	2	61	3.6	0.05	0.05	0.26
27-Mar-91	BL	12 BLOOMS DITCH @ 110th BRDG	138209	63	2.0	1 U	11	2.8	0.05	0.03	0.13
30-Jan-91	BL	13 SALMON Cr @ LITL RK RD BRDG	58210	97	0.8	1	5	4.2	0.03	0.01 U	1.80
27-Mar-91	BL	13 SALMON Cr @ LITL RK RD BRDG	138210	96	1.0	1 U	5	3.8	0.02	0.01	1.25
30-Jan-91	BL	14 BEAVER Cr @ LITTLE ROCK RD	58211	83	1.3	2	67	5.3	0.05	0.03	0.84
27-Mar-91	BL	14 BEAVER Cr @ LITTLE ROCK RD	138211	79	2.1	1	280 S	4.5	0.04	0.04	0.56
30-Jan-91	BL	15 MIMA Cr @ RR BRDG	58212	48	3.5	5	71	2.8	0.03	0.01 U	0.34
27-Mar-91	BL	15 MIMA Cr @ GATE RD SW	138212	50	2.6	1	3	2.7	0.01 U	0.01	0.27
30-Jan-91	BL	16 MIMA Cr @ GATE RD SW	58213	47	2.5	5	5	2.8	0.03	0.01 U	0.29
27-Mar-91	BL	16 BEAVER Cr @ LITTLE ROCK RD	138213	78	2.0	1	410 J	4.7	0.04	0.04	0.56
30-Jan-91	BL	17 WADDELL Cr @ WADDELL RD	58214	44	1.2	1	2	2.5	0.02	0.01 U	0.53
27-Mar-91	BL	17 WADDELL Cr @ WADDELL RD	138214	45	1.0	1 U	2	2.5	0.01 U	0.01	0.47
21-Jan-91	DS	1 MS @ MELLEN ST BRIDGE	48400	67	9.0	18	12	4.1	0.10 J	0.03	0.91
18-Mar-91	DS	1 MS @ MELLEN ST BRIDGE	128400	69	5.3	8	13	4.1	0.03	0.02	0.72
21-Jan-91	DS	2 MS @ MELLEN ST BRIDGE	48401	66	8.5	18	15	4.0	0.06	0.02	0.92
18-Mar-91	DS	2 MS @ MELLEN ST BRIDGE	128401	69	5.9	5	17	4.1	0.03	0.02	0.71
21-Jan-91	DS	3 SALZER Cr @ REINKE RD XING	48402	114	10.0	4	1 U	3.2	0.09	0.01	2.05
18-Mar-91	DS	3 SALZER Cr @ REINKE RD XING	128402	116	9.6	2	15	2.9	0.05	0.01	1.73
21-Jan-91	DS	4 SALZER Cr UNDER I-5 BRIDGE	48403	91	11.5	4	84 S	6.0	0.08	0.08	1.03
18-Mar-91	DS	4 SALZER Cr UNDER I-5 BRIDGE	128403	95	10.0	5	860	5.5	0.06	0.07	0.76

Appendix 2. Chehalis lab data, January and March 1991. Continued.

Date	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N
				(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
21-Jan-91	DS	5 SALZER Cr @ PROFFIT RD CULV	48404	67	8.7	1	2	4.7	0.06	0.01	U
18-Mar-91	DS	5 SALZER Cr @ PROFFIT RD CULV	128404	68	9.0	1	9	4.3	0.03	0.01	0.52
21-Jan-91	DS	6 SALZER Cr @ PROFFIT RD CULV	48405	67	8.7	2	1	4.7	0.06	0.01	0.74
18-Mar-91	DS	6 COAL Cr @ SUNBIRD	128405	85	9.0	4	34	5.5	0.03	0.02	1.30
21-Jan-91	DS	7 SAL Cr @ CENTRALIA-ALPHA RD	48406	72	9.9	4	110	4.1	0.10	J	0.02
18-Mar-91	DS	7 SAL Cr @ CENTRALIA-ALPHA RD	128406	74	9.5	5	8300	J	3.9	0.06	0.10
21-Jan-91	DS	8 NF SALZER @ WOOD BRIDGE	48407	83	8.6	6	27	3.6	0.07	0.02	1.73
18-Mar-91	DS	8 NF SALZER @ WOOD BRIDGE	128407	86	8.5	3	23	3.1	0.03	0.02	0.37
21-Jan-91	DS	9 COAL Cr @ SUNBIRD	48408	83	9.1	6	18	5.5	0.05	0.02	1.53
18-Mar-91	DS	9 COAL Cr @ SUNBIRD	128408	87	8.8	4	35	5.6	0.03	0.02	1.25
21-Jan-91	DS	10 CHINA Cr @ ELLSBURY ST	48409	74	6.4	2	810	4.8	0.04	0.01	U
18-Mar-91	DS	10 CHINA Cr @ ELLSBURY ST	128409	91	5.2	2	84	9.0	0.04	0.01	0.67
21-Jan-91	DS	11 BERWICK Cr @ LOGAN HILL RD	48410	23	8.0	4	12	2.8	0.02	0.01	U
18-Mar-91	DS	11 BERWICK Cr @ LOGAN HILL RD	128410	22	6.2	2	2	2.2	0.01	0.00	0.01
21-Jan-91	DS	12 BERWICK Cr @ LOGAN HILL RD	48411	23	8.3	5	10	2.8	0.03	0.01	U
18-Mar-91	DS	12 BERWICK Cr @ LOGAN HILL RD	128411	22	6.2	1	8	2.2	0.01	0.01	0.01
21-Jan-91	DS	13 DILLENBAUGH Cr UNDER I-5	48412	67	6.0	3	22	4.9	0.07	0.02	0.80
18-Mar-91	DS	13 DILLENBAUGH Cr UNDER I-5	128412	73	5.0	2	100	4.5	0.06	0.02	0.55
21-Jan-91	DS	14 DILL Cr @ RR BRIDGE	48413	67	5.8	3	19	4.8	0.07	0.01	0.83
18-Mar-91	DS	14 DILL Cr @ RR BRIDGE	128413	74	4.5	2	110	4.3	0.05	0.02	0.54
21-Jan-91	DS	15 DILL Cr @ ROCK HOUSE	48414	43	4.9	3	27	3.3	0.05	0.01	0.77
18-Mar-91	DS	15 DILL Cr @ ROCK HOUSE	128414	47	5.0	2	80	2.9	0.03	0.01	0.55
21-Jan-91	DS	16 DILL Cr @ RICE RD	48415	61	8.5	5	3200	J	4.7	0.08	0.06
18-Mar-91	DS	16 DILL Cr @ RICE RD	128415	64	10.0	5	2900	4.3	0.05	0.08	0.57
21-Jan-91	DS	17 BERWICK Cr @ LA BREE RD	48416	43	6.9	5	2400	J	3.6	0.05	0.01
18-Mar-91	DS	17 BERWICK Cr @ LA BREE RD	128416	48	6.8	5	590	3.3	0.02	0.01	0.38
22-Jan-91	LM	1 MS NEAR MONTESANO	48434	69	6.4	14	71	3.6	0.06	0.02	0.76
19-Mar-91	LM	1 MS NEAR MONTESANO	128434	73	15.0	8	26	BO	3.6	0.03	0.02
22-Jan-91	LM	2 MS NEAR MONTESANO	48435	69	6.6	12	51	3.4	0.06	0.02	0.76
19-Mar-91	LM	2 MS NEAR MONTESANO	128435	73	13.0	12	33	BO	3.7	0.03	0.02
22-Jan-91	LM	3 MS @ WAKEFIELD RD	48436	74	6.4	10	46	3.9	0.06	0.03	0.91
19-Mar-91	LM	3 MS @ WAKEFIELD RD	128436	78	9.0	7	10	4.2	0.03	0.02	0.80
22-Jan-91	LM	4 MS @ WAKEFIELD RD	48437	74	6.7	10	55	3.9	0.06	0.03	0.91
19-Mar-91	LM	4 MS @ WAKEFIELD RD	128437	81	5.3	7	5	4.2	0.03	0.02	0.83
22-Jan-91	LM	5 PORTER Cr @ PORTER Cr RD	48438	74	6.3	12	77	3.9	0.06	0.03	0.92
19-Mar-91	LM	5 PORTER Cr @ PORTER Cr RD	128438	79	3.3	7	12	BO	4.1	0.03	0.02
22-Jan-91	LM	6 PORTER Cr @ PORTER Cr RD	48439	75	6.7	11	75	4.1	0.07	0.03	0.90
19-Mar-91	LM	6 PORTER Cr @ PORTER Cr RD	128439	78	5.1	7	6	BO	4.5	0.03	0.02
22-Jan-91	LM	7 MS S ELMA RD NEAR OAKVILLE	48440	78	7.6	11	88	4.0	0.06	0.04	0.95
19-Mar-91	LM	7 MS S ELMA RD NEAR OAKVILLE	128440	80	2.9	5	13	4.5	0.03	0.03	0.85
22-Jan-91	LM	8 MS S ELMA RD NEAR OAKVILLE	48441	79	8.7	11	88	4.1	0.07	0.04	0.95
19-Mar-91	LM	8 MS S ELMA RD NEAR OAKVILLE	128441	80	6.3	5	7	4.4	0.03	0.03	0.82
22-Jan-91	LM	9 MS @ INDEPENDENCE RD	48442	79	14.0	17	6	4.2	0.07	0.04	0.96

Appendix 2. Chehalis lab data, January and March 1991. Continued.

Date	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N
				(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
19-Mar-91	LM	9 MS @ INDEPENDENCE RD	128442	81	5.9	4	9	4.3	0.03	0.03	0.81
22-Jan-91	LM	10 MS @ INDEPENDENCE RD	48443	79	13.0	18	18	4.1	0.07	0.04	0.96
19-Mar-91	LM	10 MS @ INDEPENDENCE RD	128443	81	4.3	4	9	4.3	0.04	0.03	0.79
22-Jan-91	LM	11 WYNOCHEE R MONT-ABERDN RD	48444	49	5.7	8	4	2.1	0.02	0.01 U	0.31
19-Mar-91	LM	11 WYNOCHEE R MONT-ABERDN RD	128444	51	2.1	2	1	2.1	0.01	0.00	0.25
22-Jan-91	LM	12 WYNOCHEE R MONT-ABERDN RD	48445	48	5.2	10	3	2.1	0.02	0.01 U	0.30
19-Mar-91	LM	12 WYNOCHEE R MONT-ABERDN RD	128445	51	8.1	2	1	2.2	0.01	0.01	0.25
22-Jan-91	LM	13 SATSOP R @ I-5 BRIDGE	48446	56	2.7	7	7	2.0	0.03	0.01 U	0.34
19-Mar-91	LM	13 SATSOP R @ I-5 BRIDGE	128446	56	5.1	2	6	1.9	0.01	0.01	0.26
22-Jan-91	LM	14 SATSOP R @ I-5 BRIDGE	48447	55	2.6	6	5	2.0	0.02	0.01 U	0.34
19-Mar-91	LM	14 SATSOP R @ I-5 BRIDGE	128447	56	5.2	3	6	1.9	0.01	0.00	0.26
22-Jan-91	LM	15 BLACK R @ HOWANUT BRIDGE	48448	75	1.5	3	450	3.7	0.11	0.09	0.87
19-Mar-91	LM	15 BLACK R @ HOWANUT BRIDGE	128448	82	32.0	5	26	3.9	0.04	0.02	0.93
22-Jan-91	LM	16 BLACK R @ HOWANUT BRIDGE	48449	75	1.5	3	440	3.7	0.10	0.09	0.90
19-Mar-91	LM	16 BLACK R @ HOWANUT BRIDGE	128449	81	25.0	4	31	3.9	0.04	0.03	0.92
22-Jan-91	LM	17 SKOOK @ HARRISON BRIDGE	48450	96	10.0	9	4	3.0	0.06	0.02	0.83
19-Mar-91	LM	17 SKOOK @ HARRISON BRIDGE	128450	103	11.1	6	72	3.3	0.03	0.02	0.76
22-Jan-91	LM	18 SKOOK @ HARRISON BRIDGE	48451	97	10.0	9	5	3.0	0.05	0.02	0.82
19-Mar-91	LM	18 SKOOK @ HARRISON BRIDGE	128451	103	10.0	5	100	3.1	0.03	0.02	0.76
23-Jan-91	LT	1 MS @ SR 107 BRDG	48468	71	7.5	12	77	3.3	0.05	0.03	0.76
20-Mar-91	LT	1 MS @ SR 107 BRDG	128468	74	4.5	10	9	3.4	0.02	0.02	0.65
20-Mar-91	LT	2 MS @ S ELMA WAKEFIELD RD	128469	78	4.8	7	9	3.9	0.02	0.02	0.78
20-Mar-91	LT	3 MS @ S ELMA WAKEFIELD RD	128470	78	5.0	8	12	4.0	0.02	0.02	0.80
20-Mar-91	LT	4 MOX CHEH @ MOX CHEH RD	128471	54	2.3	3	1 U	3.1	0.00	0.01	0.59
23-Jan-91	LT	5 NEWMAN Cr BLW CONF W/ VANCE	48472	63	6.5	7	16	3.4	0.07	0.03	0.38
20-Mar-91	LT	5 NEWMAN Cr BLW CONF W/ VANCE	128472	60	3.8	10	1	3.4	0.02	0.01	0.23
23-Jan-91	LT	6 NEWMAN Cr SATSOP HWY BRDG	48473	41	2.5	3	15	3.2	0.03	0.01 U	0.51
20-Mar-91	LT	6 NEWMAN Cr SATSOP HWY BRDG	128473	43	2.3	5	16	3.1	0.01	0.01	0.35
23-Jan-91	LT	7 WORKMAN Cr @ LAMBERT RD	48474	54	1.5	5	3	3.8	0.03	0.01 U	0.85
20-Mar-91	LT	7 WORKMAN Cr @ LAMBERT RD	128474	56	2.0	7	3	3.8	0.01	0.01	0.67
23-Jan-91	LT	8 WORKMAN Cr @ LAMBERT RD	48475	54	3.0	5	1 U	3.8	0.02	0.01 U	0.86
20-Mar-91	LT	8 WORKMAN Cr @ LAMBERT RD	128475	57	2.3	5	2	3.8	0.01	0.01	0.68
23-Jan-91	LT	9 CLOQ Cr @ HWY 12 BRIDGE	48476	57	2.5	1	5	2.7	0.03	0.01 U	0.58
20-Mar-91	LT	9 CLOQ Cr @ HWY 12 BRIDGE	128476	59	2.3	1	2	2.7	0.01	0.00	0.46
23-Jan-91	LT	10 CLOQ Cr @ HWY 12 BRIDGE	48477	57	2.5	1	5	2.7	0.03	0.01 U	0.58
20-Mar-91	LT	10 WILDCAT Cr NEAR MOUTH	128477	68	2.8	1	4	4.0	0.02	0.00	0.64
23-Jan-91	LT	11 CLOQ Cr @ ELMA McCLEARY HWY	48478	52	2.5	2	4	2.5	0.02	0.01 U	0.47
20-Mar-91	LT	11 CLOQ Cr @ ELMA McCLEARY HWY	128478	54	1.0	1	2	2.4	0.00	0.00	0.36
23-Jan-91	LT	12 CLOQUALLUM Cr @ STAMPER RD	48479	54	2.5	2	6	2.4	0.03	0.01 U	0.42
20-Mar-91	LT	12 CLOQUALLUM Cr @ STAMPER RD	128479	55	1.0	2	1	2.3	0.01	0.00	0.33
23-Jan-91	LT	13 WILDCAT Cr NEAR MOUTH	48480	65	2.0	2	7	3.0	0.03	0.01 U	0.81
20-Mar-91	LT	13 WILDCAT Cr NEAR MOUTH	128480	66	1.8	2	9	3.0	0.02	0.00	0.65
23-Jan-91	LT	14 WILDCAT Cr E FORK	48481	62	1.5	1 U	6	3.1	0.04	0.01 U	0.81

Appendix 2. Chehalis lab data, January and March 1991. Continued.

Date	Site	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N
					(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
20-Mar-91	LT	14	WILDCAT Cr E FORK	128481	65	2.8	1	7	3.9	0.04	0.00	0.63
23-Jan-91	LT	15	DELEZENE Cr @ S BANK RD	48482	55	3.0	4	2	4.1	0.03	0.01 U	0.99
20-Mar-91	LT	15	DELEZENE Cr @ S BANK RD	128482	58	2.5	3	1 U	4.4	0.02	0.01	0.75
23-Jan-91	LT	16	MOX CHEH @ MALONE RT 12	48483	51	2.0	1 U	6	3.3	0.02	0.01 U	0.77
20-Mar-91	LT	16	MOX CHEH @ MALONE RT 12	128483	51	2.3	2	1 U	3.2	0.01	0.01	0.57
23-Jan-91	LT	17	MOX CHEH @ MOX CHEH RD	48484	54	2.0	1	8	3.2	0.02	0.01 U	0.77
20-Mar-91	LT	17	MOX CHEH @ MOX CHEH RD	128484	55	2.0	1	1	3.1	0.02	0.01	0.59
28-Jan-91	MF	0		58000	53	1.0	6	1	1.8	0.03	0.01 U	0.24
23-Jan-91	MT	1	MS @ PORTER Cr RD	48485	76	6.8	11	44	3.9	0.07	0.04	0.95
20-Mar-91	MT	1	MS @ PORTER Cr RD	128485	80	4.8	7	6 BO	4.0	0.04	0.02	0.81
23-Jan-91	MT	2	MS S ELMA RD NEAR OAKVILLE	48486	80	7.5	11	140	4.0	0.07	0.06	0.99
20-Mar-91	MT	2	MS S ELMA RD NEAR OAKVILLE	128486	82	5.3	6	17	4.1	0.04	0.02	0.87
23-Jan-91	MT	3	MS S ELMA RD NEAR OAKVILLE	48487	80	7.0	51	140	4.0	0.07	0.05	0.99
20-Mar-91	MT	3	MS @ INDEPENDENCE RD	128487	82	7.3	7	29 BO	4.4	0.05	0.03	0.83
23-Jan-91	MT	4	MS @ INDEPENDENCE RD	48488	80	8.8	12	25	4.2	0.06	0.04	0.98
20-Mar-91	MT	4	MS @ INDEPENDENCE RD	128488	81	7.0	18	29	4.1	0.04	0.03	0.81
23-Jan-91	MT	5	BCKGRND INDEPENDENCE Cr	48489	51	2.8	1	1 U	3.7	0.03	0.01 U	0.48
20-Mar-91	MT	5	BCKGRND INDEPENDENCE Cr	128489	55	2.8	2	1	3.6	0.02	0.01	0.38
23-Jan-91	MT	6	PORTER Cr @ HWY 12 BRIDGE	48490	46	2.0	6	1 U	3.4	0.03	0.01 U	0.74
20-Mar-91	MT	6	PORTER Cr @ HWY 12 BRIDGE	128490	46	1.3	2	4	3.1	0.01	0.00	0.58
23-Jan-91	MT	7	CEDAR Cr @ ELMA GATE RD	48491	49	2.5	5	1	3.3	0.01	0.01 U	0.51
20-Mar-91	MT	7	CEDAR Cr @ ELMA GATE RD	128491	52	2.3	3	4	3.1	0.01 U	0.01	0.44
23-Jan-91	MT	8	PORTER Cr ABOVE CAMPGROUND	48492	43	1.3	1 U	2	3.3	0.02	0.01 U	0.67
20-Mar-91	MT	8	PORTER Cr ABOVE CAMPGROUND	128492	42	1.0	2	1 U	3.0	0.01	0.00	0.56
23-Jan-91	MT	9	PORTER Cr ABOVE CAMPGROUND	48493	42	1.5	1	1	3.2	0.02	0.01 U	0.71
20-Mar-91	MT	9	GARRARD Cr @ MATTSON BRIDGE	128493	69	3.3	7	28	4.3	0.03	0.01	0.87
23-Jan-91	MT	10	SHELTON Cr @ CEDAR Cr RD	48494	54	3.5	4	1 U	3.7	0.03	0.01 U	1.29
20-Mar-91	MT	10	SHELTON Cr @ CEDAR Cr RD	128494	60	1.5	3	13	3.2	0.01	0.00	0.57
23-Jan-91	MT	11	ROCK Cr CALLOW & S BANK RD	48495	50	2.5	3	7	3.9	0.04	0.01 U	0.98
20-Mar-91	MT	11	GARRARD Cr @ MATTSON BRIDGE	128495	69	4.0	6	27	4.3	0.04	0.01	0.87
23-Jan-91	MT	12	ROCK Cr @ NORTON RD	48496	55	3.0	3	18	4.0	0.04	0.01	1.21
20-Mar-91	MT	12	ROCK Cr @ NORTON RD	128496	50	1.8	2	1	4.0	0.02	0.01	0.71
23-Jan-91	MT	13	GARRARD Cr @ MATTSON BRIDGE	48497	69	4.8	13	67	4.4	0.06	0.01	1.09
20-Mar-91	MT	13	ROCK Cr CALLOW & S BANK RD	128497	52	2.0	1	1	3.8	0.02	0.01	0.80
23-Jan-91	MT	14	GARRARD Cr BRKLN 1st BRDG	48498	68	2.8	8	8	4.6	0.05	0.02	1.24
20-Mar-91	MT	14	GARRARD Cr BRKLN 1st BRDG	128498	69	2.3	3	1	4.5	0.06	0.04	1.11
23-Jan-91	MT	15	INDEPENDENCE Cr RM 1.2	48499	63	5.3	11	27	4.4	0.04	0.01	0.87
20-Mar-91	MT	15	GARRARD Cr BRKLN 1st BRDG	128499	70	2.8	3	4	4.5	0.06	0.05	1.05
23-Jan-91	MT	16	INDEPENDENCE Cr RM 1.2	48500	64	6.0	9	39	4.4	0.03	0.01	0.88
20-Mar-91	MT	16	INDEPENDENCE Cr	128500	57	5.0	3	7	3.6	0.03	0.01	0.52
23-Jan-91	MT	17	INDEPENDENCE Cr UPSTREAM	48501		4.5	6	4		0.03	0.01	1.65
20-Mar-91	MT	17	INDEPENDENCE Cr	128501	66.4	5.8	4	18	4.3	0.02	0.01	0.75
29-Jan-91	NE	1	KEARNY Cr @ FRASE RD	58164	47.8	3.0	2	26	1.71	0.04	0.01 U	1.01

Appendix 2. Chehalis lab data, January and March 1991. Continued.

Date	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N
				(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
26-Mar-91	NE	1 KEARNY Cr @ FRASE RD	138164	38.4	3.5	8 B	60	1.5	0.01	0.00	1.16
29-Jan-91	NE	2 BKGRND @ BERNIER Cr	58165	77.9	2.2	2	1	5.78	0.05	0.01 U	0.66
26-Mar-91	NE	2 BKGRND @ BERNIER Cr	138165	70.3	2.9	8 B	1	4.5	0.02	0.00	0.62
29-Jan-91	NE	3 BKGRND @ BERNIER Cr	58166	77.3	2.0	2	3	5.89	0.04	0.01 U	0.66
26-Mar-91	NE	3 BKGRND @ BERNIER Cr	138166	70.4	2.6	8 B	6	4.4	0.02	0.00	0.62
29-Jan-91	NE	4 NEWAUKUM @ RR COUNTY RD BRG	58167	64.8	19.0	21	34	3.8	0.05	0.03	0.88
26-Mar-91	NE	4 NEWAUKUM @ RR COUNTY RD BRG	138167	53.8	17.0	31 B	41	2.8	0.02	0.01	0.75
29-Jan-91	NE	5 NEWAUKUM @ NEW V/LABREE RD	58168	63.9	17.0	16	43	3.69	0.05	0.03	0.88
26-Mar-91	NE	5 NEWAUKUM @ NEW V/LABREE RD	138168	53.4	15.0	28 B	43	2.8	0.02	0.01	0.76
29-Jan-91	NE	6 NEWAUKUM @ NEW V/LABREE RD	58169	63.6	16.0	17	47	3.71	0.05	0.03	0.88
26-Mar-91	NE	6 KEARNY Cr @ FRASE RD	138169	39.2	3.2	7 B	75	1.5	0.01	0.01	1.05
29-Jan-91	NE	7 NEWAUKUM @ RUSH RD	58170	62.5	15.5	17	60	3.54	0.10	0.03	0.87
26-Mar-91	NE	7 NEWAUKUM @ RUSH RD	138170	52.5	17.0	32 B	89	2.7	0.02	0.01	0.79
29-Jan-91	NE	8 NEWAUKUM @ JACKSON HWY	58171	62	15.0	18	46	3.51	0.05	0.03	0.87
26-Mar-91	NE	8 NEWAUKUM @ JACKSON HWY	138171	52.4	17.0	30 B	8	2.8	0.02	0.01	0.81
29-Jan-91	NE	9 NF NEWAUKUM @ TAUSCHER RD	58172	33.2	4.6	1	5	2.42	0.02	0.01 U	0.80
26-Mar-91	NE	9 NF NEWAUKUM @ TAUSCHER RD	138172	31.7	5.6	6 B	8	2.1	0.01	0.00	0.82
29-Jan-91	NE	10 NF NEWAUKUM @ TAUSCHER RD	58173	33.3	4.3	1 U	4	2.4	0.02	0.01 U	0.80
26-Mar-91	NE	10 NF NEWAUKUM R @ TAUSCHER RD	138173	59.2	26.0	67 B	18	3	0.02	0.01	1.01
29-Jan-91	NE	11 NF NEWAUKUM R @ TAUSCHER RD	58174	65.7	36.0	54	3 BO	3.52	0.07	0.06	0.92
26-Mar-91	NE	11 NF NEWAUKUM R @ TAUSCHER RD	138174	59.3	26.0	67 B	23	3	0.02	0.00	0.93
29-Jan-91	NE	12 NF NEWAUKUM @ N FORK RD	58175	43	1120.0	2150 J	23	3.57	0.06	0.01	0.90
26-Mar-91	NE	12 NF NEWAUKUM @ N FORK RD	138175	63.8	33.0	101 B	10	3.2	0.03	0.00	0.91
29-Jan-91	NE	13 SF NEWAUKUM @ N FORK RD	58176	62.5	3.6	4	67	3.51	0.05	0.03	0.82
26-Mar-91	NE	13 SF NEWAUKUM @ N FORK RD	138176	30.9	4.0	8 B	12	2.6	0.03	0.01	0.70
29-Jan-91	NE	14 SF NEWAUKUM @ GISH RD	58177	58.5	3.3	4	28	2.9	0.04	0.03	0.73
26-Mar-91	NE	14 SF NEWAUKUM @ GISH RD	138177	28.6	3.5	7 B	16	2.3	0.02	0.01	0.65
29-Jan-91	NE	15 SF NEW @ JORGENSEN DAIRY	58178	56.7	2.5	3	10	2.83	0.02	0.01 U	0.57
26-Mar-91	NE	15 SF NEW @ JORGENSEN DAIRY	138178	50.7	2.6	5 B	16	2.4	0.01	0.00	0.64
29-Jan-91	NE	16 SF NEWAUKUM @ 508	58179	61.4	1.3	1	2	3.2	0.03	0.01 U	0.52
26-Mar-91	NE	16 SF NEWAUKUM @ 508	138179	55.8	1.9	6 B	4	2.6	0.02	0.00	0.53
29-Jan-91	NE	17 LUCAS Cr @ SENN RD	58180	55.6	5.1	3	17	3.37	0.03	0.01 U	0.86
26-Mar-91	NE	17 LUCAS Cr @ SENN RD	138180	48.8	6.5	6 B	17	2.6	0.02	0.01	2.38
23-Jan-91	OT	2 MS @ S ELMA WAKEFIELD RD	48469	75.8	8.5	8	80	3.77	0.06	0.04	0.94
25-Mar-91	SA	1 MS @ WAKEFIELD RD	138147	75.7	7.1	9	48 S	4	0.04	0.02	0.70
28-Jan-91	SA	1 MS @ WAKEFIELD RD	58147	82.4	4.8	11	92	4.37	0.06	0.05	0.93
28-Jan-91	SA	2 MS @ WAKEFIELD RD	58148	81.3	5.5	10	75 S	4.41	0.06	0.04	0.95
25-Mar-91	SA	2 BACKGROUND CANYON R	138148	49.8	0.8	1 U	1	1.5	0.01 U	0.00	0.09
25-Mar-91	SA	3 BACKGROUND CANYON R	138149	49.9	0.3	1 U	1 U	1.4	0.01	0.00	0.09
28-Jan-91	SA	3 BACKGROUND OLD LOG AREA	58149	49.7	1.0	10	1 U	1.75	0.03	0.01 U	0.13
25-Mar-91	SA	4 SATSOP R @ MONTESANO RD	138150	55.4	0.4	1	9	2	0.01 U	0.00	0.22
28-Jan-91	SA	4 SATSOP R @ MONTESANO RD	58150	58.6	1.5	9	1	2.16	0.03	0.01 U	0.32
28-Jan-91	SA	5 W FORK SATSOP R @ SATSOP RD	58151	55.9	2.3	11	1 U	2.03	0.02	0.01 U	0.34

Appendix 2. Chehalis lab data, January and March 1991. Continued.

Date	Site	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N
					(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
25-Mar-91	SA	5	W FORK SATSOP R @ SATSOP RD	138151	53.6	0.9	1	U	1	2	0.01	0.01
25-Mar-91	SA	6	WF SAT @ SWINGING BR ST PK	138152	54.6	0.6	1	U	2	1.8	0.01	0.00
28-Jan-91	SA	6	WF SAT @ SWINGING BR ST PK	58152	56	2.0	6	1	U	1.81	0.02	0.01 U
25-Mar-91	SA	7	WF SATSOP @ COUG SMITH RD	138153	52.8	0.4	1		2	1.7	0.01	0.01
28-Jan-91	SA	7	WF SATSOP @ COUG SMITH RD	58153	53.6	1.5	7		1	1.73	0.02	0.01 U
25-Mar-91	SA	8	MID FORK SATSOP @ SATSOP RD	138154	50.4	0.4	1	U	3	1.8	0.01	0.00
28-Jan-91	SA	8	MID FORK SATSOP @ SATSOP RD	58154	53.7	1.0	4		1	1.92	0.02	0.01 U
28-Jan-91	SA	9	MF SATSOP @ KELLY RD	58155	52.3	1.0	4		1	1.65	0.03	0.01 U
25-Mar-91	SA	9	MF SATSOP @ KELLY RD	138155	50.9	0.2	1	U	1	U	1.6	0.01
25-Mar-91	SA	10	EF SATSOP @ SHAFFER PARK	138156	57.6	0.3	1	U	1		2	0.01
28-Jan-91	SA	10	EF SATSOP @ SHAFFER PARK	58156	60.2	1.0	5		2	2.1	0.04	0.01 U
28-Jan-91	SA	11	SATSOP R @ STAR LAKE RD	58157	64.8	1.3	4		1	2.16	0.03	0.01 U
25-Mar-91	SA	11	SATSOP R @ STAR LAKE RD	138157	56.3	0.4	1		1	U	2	0.02
25-Mar-91	SA	12	MF SATSOP @ KELLY RD	138158	50.9	0.2	1	U	1	U	1.5	0.01 U
28-Jan-91	SA	12	SATSOP R @ STAR LAKE RD	58158	63.7	1.0	3		1	2.13	0.03	0.01 U
25-Mar-91	SA	13	DECKER Cr @ SHAFFER PARK	138159	55.5	0.3	1	U	4	1.8	0.01 U	0.00
28-Jan-91	SA	13	DECKER Cr @ SHAFFER PARK	58159	57.9	1.0	5		2	1.97	0.02	0.01 U
28-Jan-91	SA	14	BINGHAM Cr MO @ HATCHERY RD	58160	55	1.0	4		1	U	1.92	0.03
25-Mar-91	SA	14	BINGHAM Cr MO @ HATCHERY RD	138160	54.2	0.8	1	U	1	U	1.8	0.01
28-Jan-91	SA	15	BINGHAM Cr MO @ HATCHERY RD	58161	55.3	1.0	1		1	U	1.96	0.03
25-Mar-91	SA	15	CANYON R @ FS 2153 & KELLY	138161	45.4	0.2	3		1	U	1.3	0.01 U
28-Jan-91	SA	16	BINGHAM Cr @ MATLOCK RD	58162	57.8	1.0	4		1		1.74	0.03
25-Mar-91	SA	16	BINGHAM Cr @ MATLOCK RD	138162	58.3	0.8	1	U	1	U	1.8	0.01
25-Mar-91	SA	17	CANYON R @ FS 2153 & KELLY	138163	45.6	0.3	1	U	1	U	1.3	0.01 U
28-Jan-91	SA	17	CANYON R @ FS 2153 & KELLY	58163	47.7	1.5	16		1	U	1.39	0.02
29-Jan-91	SF	1	MS @ CERES HILL RD	58181	67.4	1.7	1		5		4.23	0.03
26-Mar-91	SF	1	MS @ CERES HILL RD	138181	59.7	3.0	5	B	4		3.6	0.02
29-Jan-91	SF	2	MS @ CERES HILL RD	58182	67.4	1.7	1		2		4.3	0.03
26-Mar-91	SF	2	MS @ CERES HILL RD	138182	59.3	3.0	5	B	6		3.7	0.02
29-Jan-91	SF	3	MS @ ADNA SR6	58183	73.7	3.0	5		5		4.59	0.03
26-Mar-91	SF	3	MS @ ADNA SR6	138183	63.3	5.5	9	B	17		3.9	0.02
29-Jan-91	SF	4	BKGRND @ UPPER SLIDE Cr	58184	56	1.1	1		1	U	3.43	0.02
26-Mar-91	SF	4	BKGRND @ UPPER SLIDE Cr	138184	53.1	1.7	2	B	1	U	3.2	0.01
29-Jan-91	SF	5	S FORK @ SR6 RR TRESTLE	58185	78.5	3.8	6		37		4.96	0.04
26-Mar-91	SF	5	S FORK @ SR6 RR TRESTLE	138185	68.9	6.7	6	B	23		4	0.02
29-Jan-91	SF	6	SF @ BOISTFORT & MOONHILL	58186	78.6	3.4	5		68		4.96	0.04
26-Mar-91	SF	6	SF @ BOISTFORT & MOONHILL	138186	69.5	4.8	5	B	10		4.1	0.02
29-Jan-91	SF	7	S FORK @ BOISTFORT SCHOOL	58187	79	3.9	4		390		4.23	0.05
26-Mar-91	SF	7	S FORK @ BOISTFORT SCHOOL	138187	69.4	4.1	5	B	14		3.6	0.02
29-Jan-91	SF	8	S FORK @ WILDWOOD	58188	68.3	3.3	6		6		3.56	0.03
26-Mar-91	SF	8	S FORK @ WILDWOOD	138188	63.2	4.6	5	B	4		3.2	0.02
29-Jan-91	SF	9	S FORK @ WILDWOOD RD BRDG	58189	61.8	1.4	1		2		3	0.03
26-Mar-91	SF	9	S FORK @ WILDWOOD RD BRDG	138189	58.7	1.9	4	B	10		2.8	0.01

Appendix 2. Chehalis lab data, January and March 1991. Continued.

Date	Site	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N		
					(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		
29-Jan-91	SF	10	S FORK @ INT'L PAPER RD	58190	55	1.0	1	7	2.83	0.02	0.01	U	0.51	
26-Mar-91	SF	10	S FORK @ INT'L PAPER RD	138190	53	1.8	3	B	2	2.6	0.01	0.00	0.46	
29-Jan-91	SF	11	S FORK @ INT'L PAPER RD	58191	55.1	1.1	2	10	2.82	0.02	0.01	U	0.51	
26-Mar-91	SF	11	S FORK @ BOISTFORT SCHOOL	138191	69.6	4.3	5	B	12	3.7	0.02	0.01	0.83	
29-Jan-91	SF	12	STILLMN Cr @ LOST VALLEY RD	58192	67.2	1.5	1.005	1	U	3.49	0.03	0.01	U	0.51
26-Mar-91	SF	12	STILLMN Cr @ LOST VALLEY RD	138192	63.7	2.1	3	B	12	3.1	0.02	0.01	0.40	
29-Jan-91	SF	13	STILLMAN C @ PeELL McDON RD	58193	66	1.5	1	1	3.35	0.03	0.01	U	0.49	
26-Mar-91	SF	13	STILLMAN C @ PeELL McDON RD	138193	62.5	2.1	3	B	1	3	0.01	0.01	0.39	
29-Jan-91	SF	14	LAKE Cr @ KING RD BRDG	58194	66	7.0	3		6	4.97	0.05	0.01	0.44	
26-Mar-91	SF	14	LAKE Cr @ KING RD BRDG	138194	58.2	8.8	7	B	25	3.9	0.04	0.01	0.52	
29-Jan-91	SF	15	LAKE Cr @ KING RD BRDG	58195	64.1	6.9	3		14	4.97	0.05	0.02	0.44	
26-Mar-91	SF	15	STILLMN Cr @ LOST VALLEY RD	138195	63.8	2.9	3	B	6	3.1	0.02	0.01	0.40	
29-Jan-91	SF	16	HALFWAY Cr @ PeELL McDON RD	58196	65.5	2.5	1		4	4.55	0.03	0.01	U	0.33
26-Mar-91	SF	16	HALFWAY Cr @ PeELL McDON RD	138196	61.7	4.6	2	B	3	3.7	0.01	U	0.00	0.24
29-Jan-91	SF	17	MS @ MELLEN ST BRDG	58197	76.9	10.5	10		12	4.89	0.06	0.03	0.81	
26-Mar-91	SF	17	MS @ MELLEN ST BRDG	138197	61.7	10.0	13	B	60	3.7	0.03	0.02	0.66	
30-Jan-91	SK	1	MS @ PRATHER RD	58215	84.3	7.7	7		8	4.63	0.06	0.04	0.88	
27-Mar-91	SK	1	MS @ PRATHER RD	138215	73	8.0	7		23	3.8	0.04	0.02	0.69	
30-Jan-91	SK	2	MS @ MELLEN RD	58216	71.9	6.3	7		6	5.04	0.06	0.03	0.83	
27-Mar-91	SK	2	MS @ MELLEN RD	138216	64.5	7.3	7		21	4	0.03	0.02	0.69	
30-Jan-91	SK	3	BKGND @ RUN Cr	58217	65.9	5.8	1		2	3.07	0.05	0.01	1.50	
27-Mar-91	SK	3	BKGND @ RUN Cr	138217	54.7	12.0	1	U	5	2.5	0.03	0.01	1.37	
30-Jan-91	SK	4	BKGND @ RUN Cr	58218	65.9	5.8	1		1	3	0.06	0.01	U	1.50
27-Mar-91	SK	4	MS @ MELLEN RD	138218	64	7.2	8		29	3.9	0.04	0.02	0.69	
30-Jan-91	SK	5	SKOOKUM @ BORST PK INTERCHG	58219	87.7	10.5	8		2	2.99	0.05	0.02	0.79	
27-Mar-91	SK	5	SKOOKUM @ BORST PK INTERCHG	138219	103	8.0	4		9	3.1	0.03	0.01	0.71	
30-Jan-91	SK	6	SKOOKUM @ BORST PK INTERCHG	58220	87.4	10.5	7		6	2.96	0.05	0.02	0.79	
27-Mar-91	SK	6	SKOOKUMCHUCK @ SKOOK RD	138220	48.9	7.6	2		1	1.9	0.02	0.01	0.70	
30-Jan-91	SK	7	SKOOK @ SCHAFFER Co PARK	58221	54.6	11.5	9		4	2.43	0.05	0.01	0.77	
27-Mar-91	SK	7	SKOOK @ SCHAFFER Co PARK	138221	56.2	8.0	3		4	2.5	0.02	0.01	0.76	
30-Jan-91	SK	8	SKOOKUMCHUCK @ 7th ST	58222	52.4	12.0	7		4	2.34	0.05	0.02	0.75	
27-Mar-91	SK	8	SKOOKUMCHUCK @ TONO RD	138222	54.9	7.6	4		1	2.5	0.02	0.01	0.78	
30-Jan-91	SK	9	SKOOKUMCHUCK @ SKOOK RD	58223	46.4	12.5	7		2	1.81	0.05	0.02	0.68	
27-Mar-91	SK	9	SKOOKUMCHUCK @ SKOOK RD	138223	48.8	7.6	3		2	0.1	0.02	0.01	0.70	
30-Jan-91	SK	10	SKOOK @ RESERVOIR OUTLET	58224	45.3	14.0	8		1	1.74	0.06	0.02	0.68	
27-Mar-91	SK	10	SKOOK @ RESERVOIR OUTLET	138224	46.9	7.4	2		1	1.6	0.03	0.01	0.64	
30-Jan-91	SK	11	SKOOK ABOVE RESERV RUN Cr	58225	55.3	1.2	2		1	1.87	0.03	0.01	U	0.45
27-Mar-91	SK	11	SKOOK ABOVE RESERV RUN Cr	138225	52.2	2.6	1		1	1.7	0.02	0.01	0.49	
30-Jan-91	SK	12	HANAFORD Cr @ HANAFORD RD	58226	244	7.2	7		9	5.07	0.05	0.04	0.82	
27-Mar-91	SK	12	HANAFORD Cr @ HANAFORD RD	138226	234	8.6	7		12	4.4	0.03	0.03	0.57	
30-Jan-91	SK	13	SF HANAFORD @ HANAFORD RD	58227	122	6.9	5		4	8.58	0.06	0.05	0.77	
27-Mar-91	SK	13	SF HANAFORD @ HANAFORD RD	138227	121	9.0	5		8	6.4	0.05	0.03	0.39	
30-Jan-91	SK	14	SF HANAFORD @ HANAFORD RD	58228	122	6.6	6		6	8.62	0.06	0.05	0.77	

Appendix 2. Chehalis lab data, January and March 1991. Continued.

Date	Site	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N
					(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
27-Mar-91	SK	14	HANAFORD Cr @ HANAFORD RD	138228	234	8.5	7	17	4.2	0.04	0.03	0.57
30-Jan-91	SK	15	NF HANAFORD @ RR TRESTLE	58229	274	6.7	11	6	4.02	0.05	0.04	0.78
27-Mar-91	SK	15	NF HANAFORD @ RR TRESTLE	138229	256	8.8	9	16	3.8	0.02	0.02	0.62
30-Jan-91	SK	16	JOHNSON Cr	58230	66.9	6.4	3	7	3	0.07	0.01 U	1.17
27-Mar-91	SK	16	JOHNSON Cr	138230	65	9.6	4	13	2.4	0.03	0.01	1.20
30-Jan-91	SK	17	THOMPSON Cr @ THOMPS Cr RD	58231	49.1	5.7	3	9	2.65	0.04	0.01 U	0.80
27-Mar-91	SK	17	THOMPSON Cr @ THOMPS Cr RD	138231	49	10.0	2	1	2.7	0.02	0.01	0.88
22-Jan-91	UM	1	MS @ PRATHER RD	48452	78.4	10.5	15	74	4.07	0.06	0.04	0.92
19-Mar-91	UM	1	MS @ PRATHER RD	128452	77	4.9	6	18	4.1	0.03	0.03	0.72
22-Jan-91	UM	2	MS @ PRATHER RD	48453	77.2	11.5	16	84	3.96	0.06	0.04	0.91
19-Mar-91	UM	2	MS @ PRATHER RD	128453	77.8	9.9	6	17	4	0.03	0.03	0.73
22-Jan-91	UM	3	MS @ MELLEN ST BRIDGE	48454	70.8	12.0	15	13	4.16	0.06	0.02	0.89
19-Mar-91	UM	3	MS @ MELLEN ST BRIDGE	128454	70.1	11.3	6	31	4.2	0.03	0.02	0.69
22-Jan-91	UM	4	MS @ MELLEN ST BRIDGE	48455	69.8	12.0	19	7	4.07	0.06	0.03	0.89
19-Mar-91	UM	4	MS @ MELLEN ST BRIDGE	128455	70.1	3.2	6	22	4.1	0.03	0.02	0.68
22-Jan-91	UM	5	MS @ ADNA	48456	68.6	4.9	13	12	4.06	0.05	0.01 U	0.79
19-Mar-91	UM	5	MS @ ADNA	128456	67.5	8.2	6	6	4	0.01	0.01	0.61
22-Jan-91	UM	6	MS @ ADNA	48457	68.6	4.8	12	10	4.03	0.03	0.01 U	0.81
19-Mar-91	UM	6	MS @ ADNA	128457	67.6	4.6	6	5	4	0.02	0.01	0.60
22-Jan-91	UM	7	MS @ CERES HILL	48458	63.7	2.9	6	6	3.9	0.03	0.01 U	0.67
19-Mar-91	UM	7	MS @ CERES HILL	128458	62.5	2.5	3	8	3.8	0.01	0.01	0.49
22-Jan-91	UM	8	MS @ CERES HILL	48459	63.6	2.8	6	10	3.88	0.03	0.01 U	0.68
19-Mar-91	UM	8	MS @ CERES HILL	128459	63	3.1	3	10	3.9	0.01	0.01	0.51
22-Jan-91	UM	9	MS CHANDLER RD AT DRYAD	48460	62.7	1.8	4	2	3.82	0.03	0.01 U	0.65
19-Mar-91	UM	9	MS CHANDLER RD AT DRYAD	128460	61.4	3.2	3	8	3.6	0.01	0.01	0.47
22-Jan-91	UM	10	MS CHANDLER RD AT DRYAD	48461	62.7	1.8	6	4	3.77	0.03	0.01 U	0.66
19-Mar-91	UM	10	MS CHANDLER RD AT DRYAD	128461	61.8	3.2	3	14	3.6	0.01	0.01	0.47
22-Jan-91	UM	11	MS @ PeELL	48462	62.8	1.0	2	6	2.79	0.03	0.01 U	0.13
19-Mar-91	UM	11	MS @ PeELL	128462	60.5	0.9	2	2	2.6	0.01	0.00	0.39
22-Jan-91	UM	12	MS @ PeELL	48463	62.7	1.1	2	13	3.37	0.02	0.01 U	0.52
19-Mar-91	UM	12	MS @ PeELL	128463	60.3	3.5	2	4	2.7	0.01	0.00	0.37
22-Jan-91	UM	13	NEWAUKUM R MOUTH	48464	58.8	23.0	49	32	3.08	0.07	0.03	2.62
19-Mar-91	UM	13	NEWAUKUM R MOUTH	128464	59.1	5.3	23	53 S	3.3	0.02	0.01	0.80
22-Jan-91	UM	14	NEWAUKUM R MOUTH	48465	59	25.5	47	29	3.1	0.07	0.03	0.95
19-Mar-91	UM	14	NEWAUKUM R MOUTH	128465	60.7	5.9	27	28	3.2	0.02	0.01	0.77
22-Jan-91	UM	15	SOUTH FORK @ TRELLIS	48466	71.6	5.6	8	11	4.09	0.02	0.01 U	0.91
19-Mar-91	UM	15	SOUTH FORK @ TRELLIS	128466	71.3	3.3	4	6	4.1	0.02	0.01	0.71
22-Jan-91	UM	16	SOUTH FORK @ TRELLIS	48467	71.6	5.7	8	13	4.06	0.04	0.01 U	0.92
19-Mar-91	UM	16	SOUTH FORK @ TRELLIS	128467	71.3	2.9	4	7	4.2	0.01	0.01	0.70
21-Jan-91	UT	1	MS @ INDEPENDENCE RD	48417	76	9.0	18	19	3.97	0.07	0.03	0.95
18-Mar-91	UT	1	MS @ INDEPENDENCE RD	128417	79.8	5.4	6	15	4	0.04	0.03	0.84
21-Jan-91	UT	2	MS @ ADNA BRIDGE SR 6	48418	66.3	5.7	26	16	3.98	0.07	0.02	0.82
18-Mar-91	UT	2	MS @ ADNA BRIDGE SR 6	128418	67.2	3.5	6	8	4	0.02	0.01	0.62

Appendix 2. Chehalis lab data, January and March 1991. Continued.

Date	Site	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N			
					(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)			
21-Jan-91	UT	3	MS @ PeELL	48419	60.8	1.6	7	7	3.01	0.03	0.01	U	0.54		
18-Mar-91	UT	3	MS @ PeELL	128419	61.1	0.5	1	U	19	2.7	0.01	0.00	0.39		
21-Jan-91	UT	4	MS @ PeELL	48420	62.1	1.3	5	10	3.23	0.04	0.01	U	0.54		
18-Mar-91	UT	4	MS @ CERES HILL RD	128420	62.7	1.6	2	4	3.8	0.01	0.01	0.51			
21-Jan-91	UT	5	MS @ CERES HILL RD	48421	62.3	2.9	9	7	3.93	0.05	0.01	U	0.70		
18-Mar-91	UT	5	MS @ CERES HILL RD	128421	62.5	1.8	2	11	3.7	0.02	0.01	0.51			
21-Jan-91	UT	6	BUNKER RD PAST INGALLS RD	48422	76.3	2.0	8	1	U	3.33	0.10	0.01	U	0.52	
18-Mar-91	UT	6	BUNKER RD PAST INGALLS RD	128422	79	2.3	4	1	U	3.1	0.07	0.01	0.39		
21-Jan-91	UT	7	LINCOLN Cr BEHIND GRANGE	48423	79.3	5.6	13	10	4.05	0.03	0.01	U	2.46		
18-Mar-91	UT	7	LINCOLN Cr BEHIND GRANGE	128423	78	3.1	3	1	3.7	0.02	0.01	0.27			
21-Jan-91	UT	8	SCATTER Cr @ JAMES RD	48424	88.1	1.2	2	8	3.74	0.06	0.01	U	1.23		
18-Mar-91	UT	8	SCATTER Cr @ JAMES RD	128424	94	1.6	5	7	4.1	0.04	0.01	0.28			
21-Jan-91	UT	9	SCATTER Cr @ PACIFIC HWY	48425	82.4	1.2	2	11	3.63	0.04	0.01	U	0.82		
18-Mar-91	UT	9	SCATTER Cr @ PACIFIC HWY	128425	82	1.6	1	4	3.6	0.02	0.01	0.63			
21-Jan-91	UT	10	SCATTER Cr ABOVE TENINO	48426	80.1	2.3	5	6	S	4.11	0.05	0.01	U	0.69	
18-Mar-91	UT	10	SCATTER Cr ABOVE TENINO	128426	81.3	2.5	2	22	4.1	0.03	0.01	0.41			
21-Jan-91	UT	11	LINCOLN Cr BEFORE GALVIN	48427	68.4	6.6	7	19	S	4.19	0.05	0.01	U	0.82	
18-Mar-91	UT	11	LINCOLN Cr BEFORE GALVIN	128427	72.1	4.2	4	3	4.3	0.04	0.02	0.47			
21-Jan-91	UT	12	LINCOLN Cr @ ECHO RD	48428	68.6	9.3	26	200	S	4.32	0.09	0.01	1.08		
18-Mar-91	UT	12	LINCOLN Cr @ ECHO RD	128428	70.5	3.8	7	32	4.3	0.04	0.01	0.83			
21-Jan-91	UT	13	LINCOLN Cr @ ECHO RD	48429	69.1	8.8	29	210	S	4.34	0.08	0.01	1.12		
18-Mar-91	UT	13	SCATTER Cr ABOVE TENINO	128429	81.9	2.6	3	15	4	0.03	0.01	0.41			
21-Jan-91	UT	14	STEARNS Cr @ OAKS RD	48430	62.3	11.5	16	92	S	4.71	0.10	0.07	1.50		
18-Mar-91	UT	14	STEARNS Cr @ OAKS RD	128430	60.4	6.8	8	27	4.4	0.04	0.04	0.99			
21-Jan-91	UT	15	BUNKER Cr @ CERES Cr RD	48431	57.7	8.6	10	10	4.24	0.06	0.01	0.66			
18-Mar-91	UT	15	BUNKER Cr @ CERES Cr RD	128431	61.7	6.5	5	1	U	4.4	0.04	0.01	0.48		
21-Jan-91	UT	16	BUNKER Cr @ CERES Cr RD	48432	57.8	9.0	10	9	4.17	0.06	0.01	0.66			
18-Mar-91	UT	16	ELK Cr JUST PAST DOTY	128432	55.9	1.9	3	3	4.7	0.02	0.01	0.66			
21-Jan-91	UT	17	ELK Cr JUST PAST DOTY	48433	54.9	2.5	7	1	4.92	0.04	0.01	U	0.80		
18-Mar-91	UT	17	ELK Cr JUST PAST DOTY	128433	56.1	2.0	4	3	4.9	0.01	0.01	0.66			
28-Jan-91	WY	1	MS @ SR 107	58130	74.4	4.5	20	65	3.74	0.05	0.04	0.75			
25-Mar-91	WY	1	MS @ SR 107	138130	70.6	5.3	3	47	S	3.4	0.04	0.02	0.59		
28-Jan-91	WY	2	BKGRND SITE V-SHAPE TRAP	58131	53.2	1.0	9	1	U	1.05	0.01	0.01	U	0.06	
25-Mar-91	WY	2	MS @ SR 107	138131	70.7	5.3	1	32	S	3.4	0.03	0.02	0.59		
28-Jan-91	WY	3	BKGRND SITE V-SHAPE TRAP	58132	53	1.0	7	1	U	1.05	0.01	K	0.01	U	0.06
25-Mar-91	WY	3	BKGRND SITE V-SHAPE TRAP	138132	50.8	0.1	1	U	1	U	0.66	0.01	U	0.03	
28-Jan-91	WY	4	WYNOCHEE R @ RM 1.6	58133	51.6	2.5	10	6	2.29	0.02	0.01	U	0.30		
25-Mar-91	WY	4	WYNOCHEE R @ RM 1.6	138133	51.4	0.8	1	U	8	2.1	0.01	U	0.24		
28-Jan-91	WY	5	WYNOCHEE @ GEISSLER RD	58134	50	2.5	8	2	1.98	0.02	0.01	U	0.26		
25-Mar-91	WY	5	WYNOCHEE @ GEISSLER RD	138134	50.2	0.6	1	U	9	1.7	0.01	0.00	0.18		
28-Jan-91	WY	6	WYNOCHEE @ WYN-WISHKAH RD	58135	48.9	2.3	10	1	U	1.65	0.02	0.01	U	0.21	
25-Mar-91	WY	6	WYNOCHEE @ WYN-WISHKAH RD	138135	48.9	2.1	1	U	3	1.4	0.01	U	0.15		
28-Jan-91	WY	7	WYNOCHEE @ FS 2294 BRIDGE	58136	45.3	5.5	12	1	U	1.02	0.02	0.01	U	0.08	

Appendix 2. Chehalis lab data, January and March 1991. Continued.

Date	Site	Site	Site Description	Lab #	Cond.	Turb.	TSS	FC	CL	TP-P	NH3-N	NO2+NO3-N			
					(uhmos/cm)	(NTU)	(mg/L)	(CFU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)			
25-Mar-91	WY	7	WYNOCHEE @ FS 2294 BRIDGE	138136	47.4	3.2	1	U	2	0.57	0.01	U	0.01	0.05	
28-Jan-91	WY	8	WYNOCHEE @ FS 2294 BRIDGE	58137	44.8	6.5	10		1	1.02	0.01	U	0.01	0.08	
25-Mar-91	WY	8	WYNOCHEE @ GEISSLER RD	138137	49.9	1.2	1	U	5	1.8	0.01	U	0.01	0.22	
28-Jan-91	WY	9	WYNOCHEE ABOVE RESERVOIR	58138	65.2	1.0	7	1	U	0.84	0.01	K	0.01	U	0.08
25-Mar-91	WY	9	WYNOCHEE R @ RM 1.6	138138	50.9	2.0	2		3	2	0.01		0.01	0.24	
28-Jan-91	WY	10	BLACK Cr MO @ BLACK Cr RD	58139	39.7	2.0	8	4	BO	3.77	0.02	0.01	U	0.51	
25-Mar-91	WY	10	BLACK Cr MO @ BLACK Cr RD	138139	39.7	2.2	3		14	3.5	0.01	U	0.01	0.50	
28-Jan-91	WY	11	SYLVIA Cr @ W PIONEER ST	58140	41.7	3.3	9	5	BO	4.08	0.02	0.01	U	0.43	
25-Mar-91	WY	11	SYLVIA Cr @ W PIONEER ST	138140	42.4	3.2	1		6	3.8	0.01	U	0.01	0.37	
28-Jan-91	WY	12	WEDEKIND Cr @ GEISSLER RD	58141	45.4	2.5	10	1	U	4.26	0.03	0.01	U	0.43	
25-Mar-91	WY	12	WEDEKIND Cr @ GEISSLER RD	138141	46.6	2.5	2		1	3.9	0.01		0.01	0.41	
28-Jan-91	WY	13	CARTER Cr @ WYNOCHEE RD	58142	37.6	1.0	6		2	3.17	0.01	0.01	U	0.44	
25-Mar-91	WY	13	CARTER Cr @ WYNOCHEE RD	138142	36.1	1.0	1	U	6	2.8	0.01	U	0.00	0.41	
28-Jan-91	WY	14	SCHAFER Cr ABOVE COAL Cr	58143	40.4	1.0	5	1	U	2.37	0.01	0.01	U	0.20	
25-Mar-91	WY	14	SCHAFER Cr ABOVE COAL Cr	138143	38.7	0.2	1	U	2	1.9	0.01	U	0.00	0.16	
28-Jan-91	WY	15	SCHAFER Cr ABOVE COAL Cr	58144	40.4	1.0	7	1	U	2.29	0.01	0.01	U	0.20	
25-Mar-91	WY	15	WEDEKIND Cr @ GEISSLER RD	138144	47.3	2.5	1		4	3.9	0.02	0.01		0.41	
28-Jan-91	WY	16	BIG Cr @ FS 22 BRIDGE	58145	48.2	1.0	3	1	U	1.39	0.01	0.01	U	0.11	
25-Mar-91	WY	16	BIG Cr @ FS 22 BRIDGE	138145	44.7	1.1	1	U	2	1	0.01	U	0.00	0.07	
28-Jan-91	WY	17	WYNOCHEE ABOVE RESERVOIR	58146	65	1.0	4		1	0.85	0.01	K	0.01	U	0.08
25-Mar-91	WY	17	W BRANCH WYN FS RD 2385	138146	64.6	0.2	1	U	1	U	1	0.01	0.01	0.05	

Appendix 3. PCB and PCP concentrations from samples taken in Coal and Dillenbaugh Creek.

PCP data for Coal Creek ($\mu\text{g/L}$).

Date	Basin	Site Description	Lab #	PCB	PCB	PCB	PCB	PCB
1/21/91	DS	COAL Cr @ SUNBIRD	48408	0.05 U				
3/18/91	DS	COAL Cr @ SUNBIRD	128408	0.07 U				

PCP data for Dillenbaugh Creek ($\mu\text{g/L}$).

Date	Basin	Site Description	Lab#	Pentachlorophenol	Chronic Criterion	Acute Criterion	Other Criterion	Tetrachlorophenol	2,3,4,5 Tetrachlorophenol
1/21/91	DS	DILL Cr @ RICE RD	48415	0.042 U	6.3	10.0	0.003 U	0.003	0.003
3/18/91	DS	DILL Cr @ RICE RD	128415	0.007	---	---	---	0.005	0.005
1/21/91	DS	DILL Cr @ RR BRIDGE	48413	0.244 U	4.2	6.7	0.010 U	0.006	0.006
3/18/91	DS	DILL Cr @ RR BRIDGE	128413	0.097	4.2	6.7	0.004 U	0.006	0.006

Appendix 4. Chehalis River metals data, January and March 1991. All concentrations $\mu\text{g/L}$.

	Date	Site description	Lab #	Pb	Cd	Hg	Cu	Zn	Hard
Basin 1	22-Jan-91 19-Mar-91	MS @ PRATHER RD MS @ PRATHER RD	48452 128452	1 U 3.9 J	0.1 U 0.34 J	0.04 U 0.04 U	6.7 J 2 U	4 U 4 U	25.7 24.4
Basin 3	22-Jan-91	MS @ PeELL	48462	1 U	0.1 U	0.04 U	17	7.5 J	21.1
	19-Mar-91	MS @ PeELL	128462	1 J	0.1 U	0.04 U	2 U	4 U	21
Basin 4	22-Jan-91	WYNOCHEE R MONT-ABERDN RD	48444	1 U	0.1 U	0.04 U	4 J	4 U	18.7
	19-Mar-91	WYNOCHEE R MONT-ABERDN RD	128444	1 U	0.1 U	0.04 U	2 U	4 U	19.4
Basin 5	22-Jan-91	SATSOP R @ I-5 BRIDGE	48446	1 U	0.1 U	0.04 U	3.7 J	4 U	19.6
	19-Mar-91	SATSOP R @ I-5 BRIDGE	128446	1 U	0.1 U	0.05 J	2 U	4 U	19.4
Basin 7	19-Mar-91	PORTER Cr @ PORTER Cr RD	128439	1 U	0.1 U	0.04 J	2 U	4 U	24.2
	22-Jan-91	PORTER Cr @ PORTER Cr RD	48439	1 U	0.1 U	0.04 U	5 J	4 U	24.8
	19-Mar-91	PORTER Cr @ PORTER Cr RD	128438	1 U	0.1 U	0.04 U	4 J	4 U	24.8
	22-Jan-91	PORTER Cr @ PORTER Cr RD	48438	1 U	0.1 U	0.04 U	4.7 J	4 U	25.4
Basin 8	19-Mar-91	BLACK R @ HOWANUT BRIDGE	128448	1.3 J	0.1 U	0.04 U	2 U	4 U	27.8
	22-Jan-91	BLACK R @ HOWANUT BRIDGE	48448	1 U	0.1 U	0.04 U	3.7 J	4 U	26.7
Basin 10	22-Jan-91	SKOOK @ HARRISON BRIDGE	48450	1 U	0.1 U	0.04 U	5.3 J	4 U	29
	19-Mar-91	SKOOK @ HARRISON BRIDGE	128450	1 U	0.1 U	0.04 U	2 U	4 U	26.4
Basin 11	21-Jan-91	SALZER Cr UNDER I-5 BRIDGE	48403	1 U	0.1 U	0.04 U	4.7 J	4.7 J	30.2
	18-Mar-91	SALZER Cr UNDER I-5 BRIDGE	128403	1 U	0.1 U	0.04 U	2 U	4 U	31.3
Basin 12	21-Jan-91	SALZER Cr @ REINKE RD XING	48402	1 U	0.1 U	0.04 U	6 J	4 U	39.9
	18-Mar-91	SALZER Cr @ REINKE RD XING	128402	1 U	0.1 U	0.04 U	2 U	4 U	40.3
Basin 13	22-Jan-91	NEWAUKUM R MOUTH	48464	1 U	0.1 U	0.04 U	23.3	14 J	22.6
	19-Mar-91	NEWAUKUM R MOUTH	128464	1 U	0.1 U	0.1 J	9.2 J	4 U	20.4
	22-Jan-91	SFORK @ SR6 RR TRESTLE	48466	1 U	0.1 U	0.04 U	8.3 J	4 U	48.3

Appendix 5. Discharge(CFS) at USGS gaging stations during January and March 1991.

DATE	DISCHARGE (CFS)						
	CHEHALIS @ DOTY	NEWAKUM near CHEHALIS	SKOOK near CHEHALIS	GAGE STATION CHEHALIS @ GRAND MOUND	CHEHALIS @ PORTER	SATSOP near SATSOP	WYNOCHEE near GRISDALE
91JAN21	639	709	351	3680	6250	2730	486
91JAN22	550	642	322	3200	5520	2480	425
91JAN23	498	594	297	2840	4980	2270	426
91JAN29	316	416	312	1760	3210	1540	262
91JAN30	298	391	327	1650	3030	1460	262
91JAN31	365	421	330	1640	3020	1670	328
JAN 1991							
monthly mean	1085	994	463	5026	7774	4225	784
JAN 1940-1991							
monthly mean	1221	1078	459	5904	8364	3778	733
MAR 1991							
91MAR18	452	565	267	2840	4310	1680	223
91MAR19	424	562	244	2670	4040	1660	223
91MAR20	390	549	235	2490	3800	1590	224
91MAR25	625	808	282	3490	4460	1520	225
91MAR26	553	758	300	3510	4660	1430	224
91MAR27	492	646	283	3140	4390	1350	226
monthly mean	739	846	403	4101	5749	2283	363
MARCH 1940-1991							
monthly mean	894	773	455	4770	6885	2976	427

Appendix 6. Precipitation in the Chehalis basin during January and March 1991 surveys (NOAA 1991).

DATE	GAGING STATION ABERDEEN OAKVILLE CENTRALIA DOTY			Precipitation (inches)
	ABERDEEN	OAKVILLE	CENTRALIA	
91JAN21	0	0	T	0
91JAN22	T	0	0	0
91JAN23	0	0.04	0.06	0.07
91JAN28	0.13	0	0.08	0.03
91JAN29	0	0	0	0
91JAN30	0	0	0	0
91MAR18	0	0	0.11	0.10
91MAR19	0.18	0	0.01	0
91MAR20	T	0	0.01	0
91MAR25	0.35	0	0.19	0.20
91MAR26	0.16	0	T	0.03
91MAR27	0	0.15	0	T

DATE	GAGING STATION ABERDEEN OAKVILLE CENTRALIA DOTY			Precipitation (inches)
	ABERDEEN	OAKVILLE	CENTRALIA	
JANUARY SAMPLING				
WEEK 1 24hr				0
72hr	0.01			0.32
WEEK 2 24hr				0
72hr	0			0
MARCH SAMPLING				
WEEK 1 24hr				0
72hr	0.01			0.20
WEEK 2 24hr				0
72hr	0.56			0.55

Appendix 7. Antecedent precipitation index (API) for the Chehalis basin during the 1991 sampling period, ($K=0.98$). Precipitation data obtained from NOAA 1991.

DATE	GAGING STATION			
	ABERDEEN	OAKVILLE	CENTRALIA	DOTY
	Precipitation (inches)			
91JAN21	8.0	4.6	3.4	3.4
91JAN22	7.0	3.6	2.7	3.4
91JAN23	6.0	3.2	2.3	2.7
91JAN28	1.1	1.2	0.9	0.6
91JAN29	0.8	1.1	0.6	0.4
91JAN30	0.4	0.9	0.3	0.2
91MAR18	1.9	2.0	1.5	1.4
91MAR19	1.4	1.3	1.3	1.0
91MAR20	1.5	1.3	1.2	0.8
91MAR25	1.9	2.0	1.4	1.2
91MAR26	2.3	1.6	1.4	1.3
91MAR27	1.9	1.4	1.1	1.0